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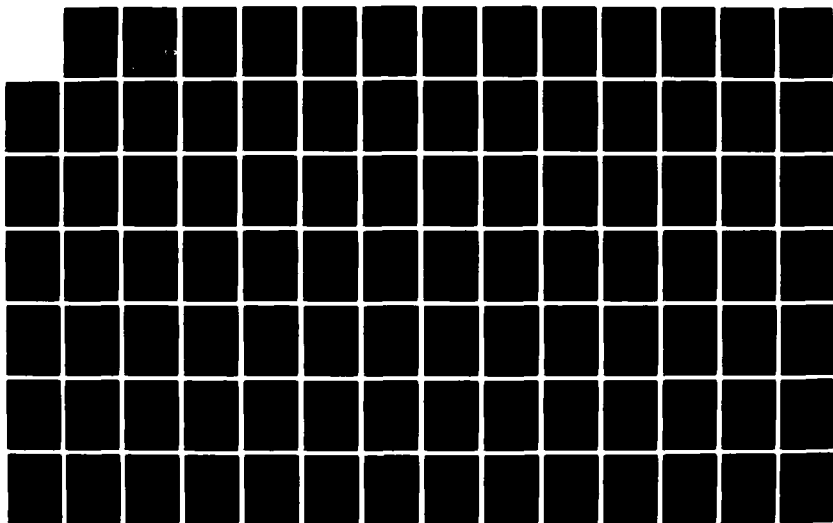
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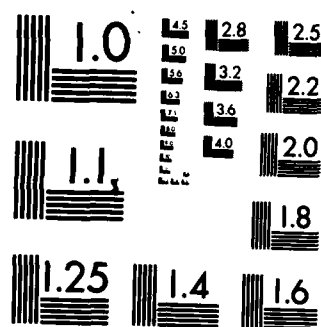
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FINAL REPORT

**SOME ECOLOGICAL CONTEXTS OF ATTITUDES  
CONCERNING ISSUES OF CIVIL DEFENSE**

BY  
**JIRI NEHNEVAJSA**

FOR

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON, D.C. 20472

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Some Ecological Contexts of Attitudes  
Concerning Issues of Civil Defense

by

Jiri Nehnevajsa

for

Federal Emergency Management Agency

Washington, D.C. 20472

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March 1983

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general attitudes toward crisis relocation, and claims regarding willingness to act. This research contextualizes each of these clusters of issues in terms of the geo-ecological characteristics at the county level. The contextualization includes both data regarding fundamental global, population composition, population dynamics, occupational structure and socioeconomic status characteristics and the Department of Defense's High Risk Areas (TR-82) data for the respondent's residence.

The key differences among respondents from counties characterized as more and less well-to-do may be summarized as: Less well-to-do counties estimate the likelihood of war, the chances of survival both in fallout and blast shelters, the current and desirable investment in civil defense, the intention to evacuate spontaneously and relocate upon recommendation by the President, and compliance with instructions where to go at higher levels than do more well-to-do counties. On the other hand, more well-to-do counties find the target and fallout danger, likelihood of Presidential decision to relocate and the associated increment to spontaneous evacuation, and likelihood of adaptive spontaneous evacuation higher than those respondents in less well-to-do counties.

Residents of high risk areas (TR-82) tend to recognize this as they perceive the target danger at higher levels than do residents of low risk areas. Furthermore, respondents residing in high risk areas perceive fallout danger at slightly higher levels, find crisis relocation slightly more desirable, and are slightly more likely to evacuate spontaneously than residents of low risk areas. Residents of low risk areas estimate the survival chances in both the "out-of-the-blue," "next week's" war, and in fallout shelters, and the time available to relocate at higher levels than do residents of high risk areas. Furthermore, residents of low risk areas estimate the likelihood of war and the survival chances in blast shelters at slightly higher levels than do residents of high risk areas.



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PROLOGUE

## 1. INTRODUCTION

This study focusses on six clusters of major issues which bear on public credibility and acceptance of national civil defense preparedness.

The first cluster of issues has to do with public perceptions of threat: the threat of nuclear war, the threat to particular geographic areas of the country of being targeted in the event of war, and the parallel threat of fallout.

It might be asserted without doing any injustice to either logic or empirical evidence: in the absence of a credible threat, it is rather unlikely that measures of civil defense would be "needed," if not "required" even though other manmade and natural hazards would still dictate the development and deployment of significant emergency preparedness programs.

The second cluster of issues has to do with public perceptions of survivability. If survival prospects, faced with a nuclear insult, were unaffected in public thinking by the deployment of alternative civil defense measures--regardless of whether such survival chances would be estimated as being quite high or being quite low--it would not be far-fetched to conclude that civil defense programs have low credibility.

This is so because it would mean that even given a credible threat (of war, of being targeted in the event of war, or being victimized by significant fallout) our people have come to the conclusion that civil defense efforts would not contribute to survival.

In this survivability domain, therefore, the study deals with survival estimates under essentially "current" conditions (of altogether minimal preparedness) as the anchorage, and evaluates effectiveness credibility of civil defense by comparing such estimates with survivabilities of a fallout-sheltered, blast-sheltered, and relocated population.

The third cluster of issues pertains to civil defense costs: it taps, in this manner, one aspect of acceptability.

Even given a credible threat and credible degree of effectiveness of preparedness systems, it is altogether plausible that our people think that the costs would be prohibitive and, perhaps, unacceptable.

To shed light on this matter, current estimates of civil defense spending are used as anchorage in a comparison of what Americans think the nation "ought" to be spending annually on programs of civil defense.

The fourth cluster of issues limits itself to the consideration of crisis relocation programs, and dwells on two classes of constraints, both, in turn identifiable as indicative of credibility or absence thereof. One of these concerns the workability of crisis relocation as such in terms of availability of time in which to deploy the program under actual conditions of threat. The second aspect in this domain of constraints deals with public estimates of actual deployment of crisis relocation: whether or not the President might ever choose to urge people to relocate.

The fifth cluster addresses basic attitudes toward crisis relocation as they reflect acceptability. Is crisis relocation desirable? Should the nation actually develop crisis relocation plans?

Finally, the last substantive cluster of issues points to acceptability-unacceptability in terms of claims regarding willingness to act. And this, in turn, means that the study deals with statements concerning the likelihood of spontaneous evacuation and the likelihood of complying with a Presidential recommendation, if not directive, to relocate.

Now these six clusters of issues form the substantive Parts of this report. In each Part, the issue itself is introduced, while individual chapters address the more specific dimensions of each of the six issues. In conclusions of each respective Part of the report, attention is paid to the identification of the more significant policy problems and policy issues to which the data point, or seem to point.

No attempt is made, presumptuous as it would be, to make specific recommendation as to how Government, or the Federal Emergency Management Agency, "ought" to resolve such problems and issues. A different analysis, along with the incorporation of much other relevant data herein not considered, would have to be necessary if the relative advantages (benefits) and disadvantages (costs) of alternative policy options associated with the problems and issues were to be evaluated.

And still more would be needed to actually say how such advantages and disadvantages, costs and benefits, might be balanced against each other in order to make a policy choice among the plausible options.

The study does imply, of course, that such further policy assessment effort would prove of considerable value and that it would not be imprudent for the Federal Emergency Management Agency to undertake it, or have it undertaken, rather systematically and quite carefully. But those are matters beyond the scope of the report.

The data base for this inquiry consists of responses of a probability sample of residents in the 48 contiguous states of the Union, 18 years of age and older, to an approximately hour-long face-to-face interview. The sample as a whole includes 1,620 respondents, defining away from the sampling frame as it did the institutionalized segment of the population as well as members of the armed forces and selecting, in each instance, but one (randomly chosen) respondent per sampled household.

The fieldwork was undertaken in the last weeks of 1978: but over the decades of research related to public views on civil defense, the basic stability and consistency of data suggests that the key results have high currency even some four years later, that is, toward the end of 1982 when this analytic exercise has been completed.

Since a new national survey is scheduled for early 1983, the approach taken here also serves as a prototype for one aspect of analysis of the yet-to-be-done 1983 survey, an analysis worthwhile in its own right but also permitting a comparison with the 1978 results reported here.

This particular report is furthermore different, and perhaps innovatively so, from the more conventional approach whereby the researcher deals with elaborations of data in terms of socio-demographic or socio-cultural characteristics of the respondents: that is, in terms of their sex, age, education and the like.

Instead, the study contextualizes responses by characteristics of the counties in which the respondents resided at the time of the study in order to determine the extent to which major traits of residential areas, here aggregated in county terms, yield different perspectives on the substantive matters of the research so that one might talk about differences in area ambience as having much, some, or no bearing on the public perspectives of threat, survivability, civil defense costs, crisis relocation constraints and acceptabilities, and expressed willingness to evacuate or relocate.

A brief discussion of the simple methods used in the conduct of this analysis is contained in the subsequent chapter on Methods.



## 2. METHODS

The methods involved in this analysis are relatively simple ones. But some words of explanation are both in order and necessary.

The data base consists of a string of variables, a record for each respondent, representing answers to the questions posed in the course of the face-to-face interview.

It was augmented in two ways. For one, the High Risk Areas document, TR-82, of the Department of Defense was used to "tag" each respondent as living either in a High Risk or in a lower risk, or safer, area.

This made it possible to elaborate the total sample of 1,620 respondents by the TR-82 "risk" variable--with some 77 percent having lived in late 1978 in High Risk areas, and the remaining respondents, of course, in lower risk, or safer, areas.

Second, each respondent record was augmented by the inclusion of data from the 1975 Bureau of the Census City and County data tapes. The "county" had to be used as the key analytic unit since a more detailed information on residences of the respondents or precise information on risk variability within counties was not readily available.

The county characteristics, in turn, form several convenient clusters.

One has been termed, throughout the report, the Global Characteristics. It includes:

- (a) Population density
- (b) Percentage of county urbanization
- (c) Total farm acreage in the county
- (d) Percentage of county land in farming
- (e) Percent of housing structures built in the pre-1950 time-frame, and
- (f) Percent of housing structures built after 1960

The second subset of variables is of the Population Composition type:

- (a) Percentage of residents who are "minority" group members (defined, as in the Census data, as the "non-whites");
- (b) Percent of the population under 5 years of age;
- (c) Percent of residents 65 years of age and older;
- (d) Percentage of dwelling units that were owner occupied.

Population Dynamics indicators formed the third subset of county characterizations. Here, the respondent records were augmented by the inclusion of the following:

- (a) Population growth, 1960-1970
- (b) Net migration, 1960-1970
- (c) Percentage of those who moved into their current residence during the decade of the 60's
- (d) Birth rate
- (e) Death rate

The fourth subset of variables concerned some key characteristics of the Occupational Structure, to wit:

- (a) Percent employed in manufacturing
- (b) Percent employed in wholesale/retail
- (c) Percent employed in Services
- (d) Percent employed in education, and
- (e) Percent employed in construction, along with
- (f) Percent of population living on farms

Finally, several variables were chosen to characterize, as it were, the county's "socioeconomic status." The subset included:

- (a) Percent with High School education or more
- (b) Percent families with female head
- (c) Percent families with income lying below the then-defined poverty line
- (d) Median family income
- (e) Median dollar value of owner occupied housing units
- (f) Average 1969 value of farms
- (g) Average dollar value per acre of farm land, and
- (h) Per capita local government expenditures per year.

A review of the distributions of respondents by each of these county characteristics pointed to reasonable ways of grouping, or reclassifying, these county traits.

In some instances, several categories were used. For example, the "median family income" distribution of respondents-in-terms-of-counties led to a decision to cluster respondents into four broad categories:

- (a) those in counties with median income below \$8,000, (b) those in counties with median income between \$8,000 and \$10,000, (c) those with

median income between \$10,000 and \$12,000, and (d) those living in areas with median family incomes in excess of \$12,000 per year. In other instances, the respondents were divided only as living in counties "above" or "below" average on a particular variable: for instance, those in counties with above average employment in manufacturing and those in counties with below average employment in manufacturing. The details of the actual groupings, along with numbers of respondents in each category, are provided in the report's Appendix.

Throughout, the differentiation by level of risk (TR-82 High Risk versus lower risk areas) was maintained so that the perspectives of respondents on the substantive matters of the research separated higher and lower risk respondents (by the TR-82 standard) and within each of these two risk levels, by particular characteristics of each county.

The key questions, of course, were of the following kind: to what extent are the response patterns homogeneous across various types of the nation's counties? To what extent are High Risk area residents similar to, or different from, lower risk area residents? Which, if any, county characteristics, one by one, yield differences and which ones do not? Which clusters, or subsets, of county characteristics yield similarities (homogeneities) and differences (heterogeneities) in perspectives?

The "whys" of such differences as were found, and which the report documents, of such similarities or differences have not been explored at this time in the kind of theoretical depth as would be most desirable: this is a task that remains to be done, but its worthwhileness will be substantially greater in the analysis of the forthcoming 1983 national study. In this sense then, this 1978 data reanalysis is more exploratory in nature though it certainly suggests that the approach ought to be replicated on the subsequent data base--and, indeed, with 1980 Bureau of the Census statistical descriptors of counties, or even better refined geographic areas.

The overall sample size limitations (with N = 1,620) with elaborations by risk level and county characteristics make it impossible, unfortunately, to treat more than one characteristic (county) at a time or one issue of credibility and acceptance (respondent answers) at a time. The researcher simply runs out of "cases" whenever a more elaborate multivariate approach is contemplated or actually tried, so that broader configurational effects

have to be inferred from the simpler rather than the more desirable multivariate analyses.

There is, to be sure, no "ecological fallacy" either intended or committed in the course of the interpretations. Thus if residents in counties with many formally more educated residents differ from those with few formally more educated residents, as does happen often enough to be a relatively robust indicator of an underlying configuration of public thinking, this does not represent a statement about "more" or "less" educated respondents. Rather, it only says that in county-like ambiences with many more educated the response patterns tend to be different, to the extent to which they are, from the responses in ambiences involving only few more educated residents.

Only further substantive analysis can help determine how "more" or "less" educated respondents think of civil defense credibility and acceptance problems in ambiances with many or fewer more educated people. This, too, is something that remains to be undertaken as it should be.

Specific indices used in this inquiry are discussed in some detail in each appropriate Part of the report: it would prove redundant to repeat the approach here. Suffice it to say that all respondent reactions were transformed into indices that have a well-defined minimum value (usually, zero) and a well-defined maximum (herein, 100). Generically, the higher the index values, the higher the respective aspect of credibility or acceptance.

The analysis of civil defense costs (both current and desirable) deviates from this indexing format: the data deal with public dollar estimates and while zero dollars does establish a minimum, there is no natural maximum, or no natural closure.

Similarly, the analysis of desirability of crisis relocation involves a somewhat different scale--one that runs from (-3), representing an extremely unwanted situation (and thus the scale minimum), to (+3), standing, in turn, for an extremely desirable outcome (and thus the scale maximum).

But more detailed explanations are provided throughout the report as they bear on each individual substantive domain on inquiry, and on each issue within the domain of analysis.

Since policy problems and policy issues are outlined in conclusions to each substantive Part of the report, it needs to be said that there is no formal method used, or usable, in deriving such public policy concerns directly from the data or from the analytic results of the data manipulations. Thus such statements represent the researcher's search for "deeper meanings," the meanings which "lurk" behind the data but cannot be proven as directly driven by the data. The statements regarding policy problems and policy issues then are substantive interpretations of more generic implications of the results on the part of the researcher and not a clean and robust byproduct of the direct analysis itself.

PART A

THREAT PERCEPTIONS

## I. INTRODUCTION

Three items\* are considered here:

- (1) Nuclear war perceptions
- (2) Target risk perceptions
- (3) Fallout risk perceptions

In this particular context, the term "perceptions" is used generically to refer to responses of the sample of nation-wide respondents to questions pertaining to each of these three major threats.

Public thinking about the possibility of a nuclear war was tapped in the following manner:

"How likely do you think it is that we're in for another World War--one where nuclear weapons would be used?" (Question 4, 1978 Instrument)

The structured responses, shown to each respondent on a card, allowed for "very likely," "likely," "50-50 chance," "unlikely," and "very unlikely" answers. A spontaneous response of a different kind ("never will happen," "there will never be another war") were recorded as such (with 2.3 percent of the respondents actually volunteering this reaction to the question).

Questions were also asked about the timing of such a possible conflict, and the kinds of circumstances which might trigger it. These matters are not explicitly considered here.

"In case of nuclear war, how great a danger do you think there is that the area around here would be a target?" (Question 13, 1978 Instrument)

"If a nuclear war occurred and this area itself was not the target of a direct attack, how great a danger do you think there would be from fallout around here?" (Question 14, 1978 Instrument)

A response card, used for both of these threat items, included "certain danger," "great danger," "some danger," "little danger," and "no danger at all."

The reason why the respondent's residential area might prove to be a target was also explored in an open-ended manner. This, too, is not elaborated upon further in this particular report.

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\*Herein as well as throughout the report, the term "item" is used exclusively to refer to a specific question asked in the study.

The contingent relationships among these questions, obvious though they may be, need to be noted: clearly, the target risk item is contingent on there being a war somewhere in the future; and the question pertaining to secondary effects of a nuclear conflagration (fallout) is made explicitly contingent by its wording on the particular area not being a target.

In terms of a policy-related perspective, these three items concern civil defense credibility--and this, in turn, with respect to threat credibility.

It would seem reasonable to postulate that in the absence of perceived threat of nuclear war (that is, were the public to consider a nuclear conflict unlikely, if not impossible), many Americans might conclude that there could possibly be "no need for civil defense." This, of course, would in no way preclude their conviction that "something" like civil defense would be required anyway to cope with natural and man-made emergencies short of nuclear war.

Similarly, public belief (operationally: statements or claims in response to questions) in one's area not being a likely target and/or not at risk from fallout would tend to induce reactions to civil defense quite different from those elicited if our people thought otherwise.

Note, however, that on such a basis alone it would be somewhat difficult to speculate what pattern of reactions to civil defense might be encountered "in the field": thus, for instance, whatever one may think about the target or fallout risk or both, civil defense efforts could still "make no sense" if people were to conclude that such efforts, and whatever efforts, would do no good in the event of nuclear war anyway. This dimension, one of effectiveness credibility, becomes the focus of another part of this report and is not explicitly taken into account here.

Yet, it might be said, how is all this, or any of this, "policy-relevant"--an assertion made above?

The purpose here is not to explore various policy options and to identify their advantages or disadvantages, and certainly not with respect postulatable extreme instances (such as if by far most Americans were to think that another war had essentially a zero likelihood; or if all were convinced that a nuclear war was "just around the corner").



But illustrative policy issue indication might be in order.

Suppose the Federal Government were to conclude, on the basis of whatever intelligence community estimates, that a nuclear confrontation had a negligible, near-zero, probability. And suppose the nation's public also thought that nuclear war was highly improbable in the foreseeable future, if ever. Should then programs of civil defense (as they apply to the nuclear war risk) be pursued at all? Should the consideration, by the Government, of high consequences despite the hypothesized negligible risk drive the need for a program of sorts anyway?

Suppose, however, that our people considered the risk of war to be negligible, perhaps non-existent, but the Federal Government viewed the danger as more formidable. Would then be advantages or disadvantages (and what would the balance look like?) to bring the public's thinking more in tune with otherwise estimated, higher, war probabilities? And suppose public estimates of the threat of war far exceeded those of the Federal Government. Would it prove prudent to maintain such levels of public concern (by not doing anything to counteract the worries) or to attempt to defuse them?

The policy issues related to the "target" and "fallout" danger matters are similarly weighty. Without detailing them here, suffice it to say that they raise such fundamental problems as those between "equality" (providing essentially equal protection for all) and "equity" (providing protection somehow proportionate to, or commensurate with, the estimated severity of the particular risks).

It goes without saying that policy issues at this roots level open up "options" out of which "decisions" are made, or for that matter postponed. At the more concrete level of policy decision, given issues and given options associated with the issues and both facilitated and constrained by factors of resources (human, material, technological, fiscal), the choices have to account for some assessment of standards (by which choice A is preferable over choice B, C, D, and E and the like), a consideration of benefits and costs (both in dollars and otherwise), a consideration of timing of both decision and its implementation lifeline and so on.

What then can be said about the threat perception patterns across the nation as a function of the kind of "area" (county, in the current operationalization) where the respondents live? What, if any, are the policy issues and implications? This is the key objective of this segment of the report.

## II. THE THREAT OF WAR

The responses to the "likelihood of nuclear war" item are recast here onto a simple number scale. The answer that such a war is "very likely" is conceptualized as if it hovered near "certainty." It was assigned, for this purpose, a value of 100 (or,  $p = 1$ , but multiplied by 100 for convenience). The "likely" response has a "value" of 75. Clearly, the "50-50 chance" reaction was given a value of 50. Symmetrically, the "unlikely" answer has an indexed value of 25, and the "very unlikely" as well as "never will happen" responses have been assigned a value of 0 (zero).

Clearly, such assignments of numbers to essentially qualitative responses are somewhat arbitrary: thus the overall index values which can range from 0 (for essentially no likelihood of war) to 100 (for essentially "certainty") cannot be interpreted as actual likelihood estimates. That is to say, the magnitudes themselves are not particularly revealing, save in the manner discussed later, but the response patterns are.

Assigning other values to the responses, as long as such simple quantifications would remain symmetrical around the 50-50 midpoint would alter the index values but not the derived response patterns.

Table 1 provides the original study percentages as a point of departure.

Table 1  
LIKELIHOOD OF NUCLEAR WAR  
(N = 1,620)

	<u>Percent</u>
Very likely	13.6
Likely	15.1
50-50 chances	29.9
Unlikely	25.9
Very unlikely	10.9
(Never will happen)	2.3
(No answer/refusal)	2.4

This says, of course, that some 28.7 percent thought that a nuclear war was either likely or very likely; that 58.6 percent assigned a likelihood of 50-50 or higher to such a future event.

In Table 2, the quantified indices are given.

Table 2  
NUCLEAR WAR LIKELIHOOD INDICES\*

	<u>Index Value</u>
National sample	47.5
TR-82 Risk Areas	47.2
Other than TR-82 Risk Areas	48.4

\*These are 0-100 indices resulting from the simple quantification discussed above. The higher the index, the higher the perceived threat of nuclear conflict.

Two significant conclusions are immediately apparent: (a) The threat of war hovers, in the nation's perception, somewhere around the "toss-up" marker (50-50 chances). It would seem difficult, no matter what the index arithmetic, to conclude that the threat of war is not credible. Thus: the threat of nuclear war represents a credible threat. (b) The threat is seen similarly by respondents in High Risk Areas (TR-82 being the referent, here and hereafter) and in Other Areas ("Safe" or "Safer" areas, though the term "Other Areas" is preferred throughout since "safety" might be a euphemism under many plausible patterns of actual attacks). Thus: in terms of Risk/Lower Risk locations of respondents, the nation is homogeneous with respect to the basic assessment of a nuclear war threat.

What then, if any, are some of the important differences in the perception of the threat of war dependent on the kind of area where the respondents live?

Table 3 highlights the main differences for residents of TR-82 Risk Areas. Table 4, in parallel fashion, focusses on respondents in Other than TR-82 Areas (Other Areas, for short).

Table 3

HIGHER AND LOWER WAR RISK ESTIMATES BY TYPE OF AREA AMONG TR-82 RISK AREA RESIDENTS

<u>Higher likelihood</u>		<u>Lower likelihood</u>	
<u>Characteristics*</u>	<u>Likelihood</u>	<u>Characteristics*</u>	<u>Likelihood</u>
Very low density	49.8 $\xrightarrow{**}$ Very high density		42.2
High percent below poverty	54.4 $\xrightarrow{---}$ Very low percent below poverty		41.4
High owner occupancy	49.9 $\xrightarrow{---}$ Very low owner occupancy		37.5
Low median income	53.9 $\xrightarrow{---}$ High median income		42.1
Low value of owner occupied dwellings	51.8 $\xrightarrow{---}$ High value of owner occupied dwellings		41.0
Lower per capita government expenditure	52.7 $\xrightarrow{---}$ High per capita government expenditure		44.7

\* For more precise operational definitions used in the study, see APPENDIX.

\*\* Here, and hereafter, an arrow indicates that the index values decrease monotonically over the defined categories of the county characteristic. (In this case, from the "very low density," up to 100 per square mile, to "very high density," 10,000 per square mile and more.)

An arrow with dash marks ( $\xrightarrow{---}$ ), as with respect to value of owner occupied dwellings, indicates a basic tendency of the index to move with the demographic categories though there exists a slight irregularity in the pattern).

Table 4

## HIGHER AND LOWER WAR RISK ESTIMATES BY TYPE OF AREA AMONG OTHER THAN HIGH RISK AREA RESIDENTS

<u>Higher likelihood</u>		<u>Lower likelihood</u>	
<u>Characteristics</u>	<u>Likelihood</u>	<u>Characteristics</u>	<u>Likelihood</u>
Very low density	51.7	Low density*	40.2
Negative 1960-70 population change	54.6	10-25 percent increase	45.2
Higher outmigration (net migration effect)	62.3	Low (to 10 percent) immigration (net migration effect)	42.7
Higher urbanized area	59.4	50-75 percent, medium, urbanization	43.8
Very high minority population	59.1	High minority population	41.2
Above mean in percent under 5 years	54.4	Below mean under 5 years of age	45.5
Below mean in percent 65 and over	54.6	Above mean of 65 and over	43.9
Above mean in birth rate	56.9	Below mean in birth rate	46.2
Very few with HS or higher education	56.3	Medium (45-55 percent) with HS or more education	42.2
Below mean in manufacturing employment	51.2	Above mean in manufacturing employment	44.6
Above mean in employment in services	53.0	Below mean in employment in services	46.2
Above mean in educational employment	52.6	Below mean in educational employment	45.5
Low median income	53.9	High median income	44.1
High percentage of families with female head	63.5	Very low percentage of female-headed households	39.4
Very high percent below poverty line	62.5	Medium percent below poverty line	43.2
Above mean percent structures built after 1960	54.0	Below mean percent structures built after 1960	45.8

Table 4 (continued)

Very high percent who moved to area 1960-1970	59.4	Low percent who moved to area in the 1960s	32.8
Per capita government expenditures medium (\$200 - \$250)	53.4	Higher per capita expenditures (over \$250)	43.9
Very low farming population	53.6	Farming population 1-5 percent	42.5
High farming population (over 15 percent)	55.6		

\* In Other Areas, as in this Table and parallel Tables, no respondents were found where population densities exceeded 1,000 per square mile. Thus "very low density" refers to densities of up to 100 per square mile, and "low density" to those in areas with 100-1,000 residents per square mile.

Clearly, some potentially important conclusions might be drawn on the basis of the data of Tables 3 and 4.

1. While there exist ecology-grounded differences in war risk estimation, the prevailing pattern, both in risk and other areas, is a rather homogeneous one. Thus, for instance, the risk index never falls much below 40.0 (and does so only in relation to two characteristics of the Other Area counties) and it never climbs much over 60.0 (and does so only in relation to three traits of counties in the Other-than-High-Risk Areas).
2. In the Risk Areas, the sense of the data suggests higher assessment of nuclear war risks in low density counties (where risk seems driven by the presence of important military targets), in areas where median family/household income tends to be low, where many people fell below the extant poverty line, local government expenditures were relatively low, and many owners occupied housing of relatively low financial worth. By contrast, the lower war risk estimates come from densely populated areas with high median income households, relatively low owner occupancy but high value of those units that owners did occupy, and relatively high local government per capita expenditures. While no specific county or counties can be singled out as typical in terms of all the salient characteristics, Table 5 illustrates such areas if only to bring the data closer to living reality.

Table 5

SOMEWHAT TYPICAL AREAS WITH HIGHER AND  
LOWER WAR LIKELIHOOD PROBABILITIES\*

<u>Higher Likelihood of War</u>	<u>Lower Likelihood of War</u>
St. Clair County, Missouri	District of Columbia
Johnson County, Missouri	Baltimore City
St. Bernard Parish, Louisiana	New York City (counties)
Ogle County, Illinois	

\*The term "Somewhat Typical" refers to the fact that some of the ecological traits of Table 3 are, indeed, conjoint in these counties.



3. Many more ecological traits differentiate, in terms of war likelihood estimates, among the counties in Other Areas. This should, in itself, occasion no great surprise: the risk areas are predominantly more urbanized and industrialized complexes of the nation that tend to be, in important ways, much more alike than different from each other (despite also many crucial, regional and other differences). The lower risk areas, in turn, display much greater nationwide diversity along many salient lines (ways of making a living; topography; region; and the like--all subsumable, in a manner of speaking, under the caption of "lesser technological" homogenization in general). Table 6 is again illustrative.

Table 6

LIKELIHOOD ESTIMATES, HIGHER AND LOWER  
IN OTHER THAN HIGH RISK AREAS

<u>Higher Likelihood of War</u>	<u>Lower Likelihood of War</u>
Otter Tail County, Minnesota	Madison County, Nebraska
Marlboro County, South Carolina	Pecos County, Texas
Reeves County, Texas	Sheboygan County, Wisconsin

4. If in the higher Risk Areas factors which bear above all on socioeconomic conditions lead to the most important risk perception differences, in Other Areas, population dynamics (population growth, migration) along with the occupational structure itself (employment in manufacturing, services, education) and some key aspects of the population composition (percent below 5 years of age and percent above 5 years of age; percentage of minorities) seem particularly salient.
5. If overarching conclusions were to be stated, two such statements would well encompass the main thrust of the data:
- (a) The risk of war is seen lower in more well-to-do areas of the county than in other areas.
  - (b) The risk of war is seen lower in less rural (indeed, more urban) areas of the country than in other areas.

6. But to repeat what has been asserted previously: such differences as exist (and to which Tables 3 and 4 point along with illustrative "types of counties" of Tables 5 and 6) occur around a nationally essentially homogeneous viewpoint.

Nuclear war then, perhaps unfortunately, is rather credible across the ecological landscape of America.

### III. TARGET DANGER

A Target Threat Index is formed again on the basis of the more qualitative responses. An answer that there exists "certain danger" than one's area would be a prime target was assigned an index value of 100; the "great danger" response rated a value of 75; the "some danger" answer was index at a value of 50; the "little danger" reaction of the respondents was given a value of 25; and the "no danger at all," of course, scored a value of 0 (zero) on the aggregate index.

Thus the index range from 0 to 100 means that the higher the index value the higher the perceived risk of living in a target area contingent on the occurrence of nuclear war.

Table 7 gives the basic percentages (not index value) for the sample as a whole. Table 8, in turn, shows the index values for the national sample, for those in Risk Areas and for those in Other Areas.

Table 7  
PERCENTAGES OF RESPONDENTS BY  
PERCEIVED TARGET DANGER  
(N = 1,620)

	<u>Percent</u>
Certain danger	24.9
Great danger	29.6
Some danger	23.5
Little danger	14.6
No danger at all	4.4
Don't know/no answer	4.0

In simple terms: 54.5 percent of Americans (in the contiguous states) thought themselves to reside in a "great" or even "certain" danger areas; 78.0 percent, cumulatively, stated that they lived in areas of at least "some danger" of being direct targets of a potential enemy attack (should war take place).

Only 4.4 percent, by contrast, were convinced that they were at no risk at all (and the additional don't know/no answer 4.0 percentage points are, of course, uninterpretable along these lines).

Table 8

TARGET RISK PERCEPTION INDICES

	<u>Index Value</u>
Total Sample	64.4
In TR-82 Risk Areas	67.0
Other Areas	54.8

Some major conclusions can readily be drawn:

- (1) The "likelihood" of being in a target danger area turns out to be just about 2/3 (slightly less so) across the nation. This would strike a researcher somewhat familiar with the postulated effects of massive attacks in the early 1980's as being rather realistic, intuitive though the general public's reaction is rather than based on "harder" information. In some sense, it makes the result particularly interesting.
- (2) There exists a fairly robust difference in the target danger index between those living in Risk Areas and those in Other Areas. Thus even though the war likelihood perceptions are basically homogeneous across the nation (and certainly do not vary by the Risk/Lower Risk variable), the estimation of being at risk as a potential target does vary and quite significantly so.
- (3) Whatever mistakes people may be making about identifying themselves as being or not being in a likely "high risk area," there is sufficient intuitive recognition of an important difference.

But, of course, the index value of 54.8 in Other Areas is a very high value if one were to assume that these residents are, in fact, unlikely to be victimized by a direct attack in the event of war (that is, if one uses TR-82 as an objectification of a likely attack pattern at least for the early 1980's).

By the same token, the index value of 67.0 in Risk Areas is rather low on the same premises: if these areas are really likely to be subjected to a direct insult and if people were somehow (more) aware of this, the index here should really have a value much higher than its empirical manifestation as of late 1978 indicates.

At the same time, from the vantage point of public enlightenment, the difference between the indices is a strong one and it is in the "right direction" (which means, of course, that people in Risk Areas "ought" to feel more at risk than people in Other Areas).

The question regarding ecological correlates is now again posed. Table 9 gives the highlights of important differences among residents of Risk Areas. Table 10 concerns the residents in Other (than High Risk) Areas.

The important, though surprise-free, difference between risk and lower risk area residents has already been pointed out: in TR-82 high risk areas, the target danger perceptions are substantially higher than they are in "other" areas of the nation.

What the data reveal, though Tables 9 and 10 do not show this directly (not containing each and every detailed statistic trait by trait), is also that the perceived target threat index is lower in other than TR-82 high risk areas across all ecological characteristics than it is in these higher risk areas.

Now some conclusions, once again, seem quite pertinent.

1. The typical differences shown in Table 9 suggest that in the High Risk areas (of TR-82) residents are consistently somewhat less worried, though worried they are indeed, about being targeted if they live in poorer counties, with higher percentage of population in farming, where density is low, and population growth is also low with, in fact, some significant net outmigration. The higher risk indices then generally characterize areas that are very different from this pattern: high population densities, essentially no farmers, high population growth with an important immigration component, high percentage of people with high school or more education, and high median household income.
2. Other than TR-82 risk areas yield a basically similar profile though some of the specific variables which enter into the more robust differentiation (of Table 10) are not the same as those shown in Table 9 for the high risk areas. Lower indices again characterize what appear to be poorer areas

Table 9

HIGHER AND LOWER TARGET DANGER ASSESSMENTS BY RESIDENTS OF TR-82 HIGH RISK AREAS

<u>Higher Risk</u>		<u>Lower Risk</u>	
<u>Characteristics</u>	<u>Risk Index</u>	<u>Characteristics</u>	<u>Risk Index</u>
High density	77.4* →	Very low density	60.0
Very high population growth	72.2** →	Low population growth	62.9
Medium net immigration	75.0	Higher outmigration	60.1
High percentage of more educated	73.7	Medium percentage of more educated	63.6
High median income	74.3 →	Low median income	56.2
No farm population	69.6 →	High percentage farm population	54.2

\* The "very high density" area residents (10,000 and more per square mile) yield a relatively low index value of 62.8, higher only than among the "very low density" area interviewees.

\*\* Residents in negative growth areas have an index of 64.0 which is higher only than the index among those in the "low population growth" (0 to 10 percent) areas.

Table 10

HIGHER AND LOWER TARGET DANGER ESTIMATES BY RESIDENTS OF OTHER THAN TR-82 HIGH RISK AREAS

<u>Higher Risk</u>		<u>Lower Risk</u>	
<u>Characteristics</u>	<u>Risk Index</u>	<u>Characteristics</u>	<u>Risk Index</u>
Higher population growth	60.9	Negative growth	48.0
Medium net immigration	60.0	Higher outmigration	47.5
Medium minority population	63.3	Higher minority population	47.0
Above mean of 5 year olds and younger	62.2	Below mean of 5 year olds	51.2
Higher than mean birth rate	65.6	Lower than mean birth rate	52.0
High percent with more education	60.8	Low percent with more education	45.5
Medium percent below poverty line	65.7	Higher percent below poverty line	47.2
Medium percent farm population	60.9	Higher percent farm population	43.6

(low percentage with high school or higher education, more people below the poverty line, more minority citizens) with essentially more negative population dynamics: negative overall population growth, negative net migration, fewer than average percentages of youngsters 5 years of age and younger, and lower than average birth rates.

3. In all then, in both higher risk and other areas of the country, population dynamics along with socioeconomic status variables seem to differentiate between higher and lower estimates of target danger: the risk indices are higher in higher socioeconomic areas and lower in poorer areas; the indices are higher in growing, and lower in declining areas.

Now, of course, while no single county may typify the full pattern involved, some examples of basically characteristic areas in each pattern may be provided.

Table 11 shows illustrative areas with higher and lower target risk perceptions among residents of TR-82 risk areas.

Table 11

HIGHER AND LOWER TARGET DANGER  
ESTIMATES IN TR-82 AREAS

<u>Higher Risk Estimate</u>	<u>Lower Risk Estimate</u>
Arlington, Virginia	Morgan, Colorado
Richmond, New York	Madison, New York
Cook, Illinois	Tom Green, Texas
	St. Clair, Missouri

For the lower TR-82 risk areas, Table 12 gives the appropriate examples.

Table 12

HIGHER AND LOWER TARGET DANGER  
ESTIMATES IN OTHER THAN TR-82 RISK AREAS

<u>Higher Risk Estimate</u>	<u>Lower Risk Estimate</u>
Riverside, California	Jackson, Arkansas
Chester, Pennsylvania	Otter Tail, Minnesota
Washington, Wisconsin	Clarendon, South Carolina



The overall risk index, characteristic by characteristic of the respective counties, has a range from 43.6 (in Other than TR-82 high areas where farming population exceeds 15 percent) and 77.4 (in High Risk areas, where population densities are of the order of 5,000 to 10,000 per square mile, that is, in counties such as Essex and Union, New Jersey, or Denver, Colorado--in addition to the pattern-illustrating counties of Table 11).

Even at the very low end of the index value range, of course, there is a strong indication that the threat of living in a potential target area is an altogether credible one. If anything then, high risk area residents may tend to underestimate the danger while lower risk area residents may be overestimating it--if one assumes that the TR-82 types of guesses about probable enemy targets have reasonable validity.

The magnitudes of the indices then also suggest that our people are quite uncertain as to what is likely and unlikely to constitute a possible enemy target--a finding which is clearly in no way counter-intuitive.

#### IV. FALLOUT DANGER

Here, the Fallout Risk Index is derived identically as was the Target Risk Index (Chapter III above). This is, of course, due to the fact that the response options presented each interviewee were the same for this item as they were for the "target danger" item.

It is, perhaps, worthwhile to mention again: the question concerning fallout danger was predicated, quite explicitly, on the idea that a particular area would not be the target of a direct attack. And the target danger item, in turn, was contingent on the outbreak of war.

Table 13, showing basic percentages from the sample as a whole, indicates that "only" some 16.8 percent of our people thought that there would be a "certain danger" from fallout if their particular residential area were not targeted; 48.3 percent thought that the danger was "great" or "certain," and 83.5 percent estimated the threat to represent "some" or more ("great" or "certain") danger.

Table 13  
PERCEPTIONS OF THE DANGER OF FALLOUT  
(IF AREA WERE NOT SUBJECT TO DIRECT ATTACK)

	<u>Percent</u>
Certain danger	16.8
Great danger	31.5
Some danger	35.2
Little danger	10.0
No danger at all	1.5
Don't know/No answer	4.9

If target risk perceptions (Chapter III above) show an important difference between TR-82 risk areas and other areas of the country, Table 14 indicates that the risk of fallout tends to be seen alike regardless of the TR-82 area allocation.

Table 14  
FALLOUT RISK INDICES

	<u>Index Value</u>
All respondents	63.7
In TR-82 High Risk areas	64.3
In Other Areas	61.4

The result, of course, seems to make considerable intuitive sense: to the extent to which particular areas, whether at risk in terms of TR-82 or otherwise, were spared as direct targets of an attack, there is no reason why the danger of fallout should be systematically different from area to area (since, according to the explicit wording of the item, the "particular" area of each respondent would not be a primary target).

Table 15 presents the key variabilities in the fallout risk index in regard to the ecological characteristics of the residential counties of the respondents.

Clearly, such differences as exist with respect to ecological traits are substantially smaller on the fallout risk than they are on the target risk measure. The key configuration of differences concerns the cluster of variables which are indicative of financial status distinctions: in more well-to-do areas (with higher incomes, fewer residents below the poverty line, higher value of owner occupied dwelling units), the fallout risk is seen higher than it is in relatively less affluent counties of the nation. Population density again is a factor: higher risk indices are associated with high, but not very high, densities, while sparsely populated counties yield lower risk index values. The residential mobility index, in turn, suggests relative stability within the counties with higher risk perceptions and, indeed, the population dynamics indices (such as population change, net migration, birth and death rates) do not enter into the basic findings any more than do variables characterizing differential population composition (such as percentage of residents 5 years and younger, 65 years of age and older, minorities) or, for that matter, traits bearing on occupational composition (percent in manufacturing, services, education, farming, construction and the like).

Table 15

HIGHER AND LOWER FALLOUT RISK ESTIMATES BY  
RESIDENTS OF TR-82 HIGH RISK AREAS

<u>Higher Risk</u>		<u>Lower Risk</u>	
<u>Characteristic</u>	<u>Risk Index</u>	<u>Characteristic</u>	<u>Risk Index</u>
High population density	75.8* —→	Very low population density	58.5
Low percent below poverty line	68.1 —→	High percent below poverty line	58.2
High median income	70.0 —→	Low median income	55.6
High value of owner occupied units	70.1 —→	Low value of owner occupied units	61.1
Low percent moved into residence during the 1960s	68.2 —→	High percent moved into residence during 1960s	62.6
Higher per capita local government expenditures	65.8 —→	Lower per capita local government expenditures	54.9

\*For "very high density" (10,000 per square mile and over) residents, the index has a value of 64.2.

Table 16 gives some illustrative examples of the types of counties most likely to represent the "higher" and the "lower" risk estimates.

Table 16  
COUNTIES WITH HIGHER AND LOWER  
FALLOUT RISK ESTIMATES  
(IN TR-82 HIGH RISK AREAS)

<u>Higher Risk</u>	<u>Lower Risk</u>
Arlington, Virginia	St. Clair, Missouri
Union, New Jersey	Orleans Parish, Louisiana
San Mateo, California	Sumter, South Carolina
Du Page, Illinois	Morgan, Colorado
Montgomery, Maryland	Tom Green, Texas

In lower risk areas, differences in terms of ecological characteristics of the counties tend to be quite subdued. But there are some tendencies:

- (a) The greater the population growth, the higher the fallout risk perception (the index having a value of 59.0 in negative growth counties, and a value of 64.2 in high growth counties with a monotonic increase from its lower to its higher value).
- (b) Negative net migration yields a low of 57.1 while high positive net migration produces an index value of 64.2.
- (c) In counties with relatively few high school (or more educated) graduates, the risk index amounts to 56.1, while in counties with high percentages of the more educated residents, the value comes to 64.6.
- (d) In counties with fewer than average percentages of residents employed in education, the index (58.4) is lower than it is in counties with an above average percentage in education (65.9).
- (e) In counties with many pre-1950 structures, the risk index is lower (58.8) than in counties with fewer such structures (67.0).
- (f) The higher the value of owner occupied dwelling units, the lower the risk perception--but the range varies only from 60.3 to 62.2.
- (g) In counties with relatively many farmers (15 percent or more) the index value is 57.1. It reaches a value of 65.2 in counties with 1-5 percent of the population in farming.

In all then, older, somewhat declining communities (in terms of population), with many employed in agriculture and relatively many with less than high school education, the fallout risk index produces lower estimates than it does in other types of the nation's communities/counties.

Some basic conclusions regarding the risk of fallout are of the following kind:

- (1) The fallout danger is perceived similarly in risk (TR-82) and lower risk (TR-82) areas.
- (2) A comparison of the indices, characteristic by characteristic, shows no robust differences between higher and lower risk counties.
- (3) Lower TR-82 risk area residents are more homogeneous in their perception of fallout risk: that is, regardless of the characteristics of the area of residents, the risk indices tend to be more alike than they are among risk area residents for whom the monetary aspect of socioeconomic status of counties plays a relevant differentiating role--higher risk indices go with higher SES.

## V. CONCLUSIONS

Three generic statements regarding threat perception on the part of the nation's public seem warranted by the data:

- (1) There exists a credible threat of war.
- (2) There exists a credible threat of being at risk as a direct target in one's residential area if nuclear war were to occur.
- (3) There exists a credible threat of being at risk from fallout if one's residential area proved not to be directly targeted and, of course, should nuclear war ever occur in the first place.

A comparison of TR-82 high risk and lower risk areas, furthermore, reveals the following:

- (1) The likelihood of nuclear war is seen quite alike regardless of TR-82 risk location.
- (2) The likelihood of being subject to risk from fallout is also seen similarly regardless of TR-82 risk area definition.
- (3) The target danger perceptions yield much higher risk indices for residents in TR-82 risk areas than for interviewees from other than high risk areas.

When it comes to elaboration of the data by characteristics of the counties in which the respondents reside, the major conclusions might be stated as follows:

- (1) Relative affluence (in terms of the various socioeconomic status indices) is an important differentiating characteristic in the perceptions of risk.
- (2) The threat of war yields lower indices with higher socioeconomic status of the area, but the target as well as fallout risk indices are higher with higher indexed level of area affluence.
- (3) These findings as they pertain to the basic SES state of the residential counties hold for both TR-82 high risk areas and for other areas of the country.
- (4) Variables bearing on the "system state" (population composition, in effect) are salient in higher risk areas but not really in lower areas.

- (5) The risk of war is higher with lower density, but the density is higher when it comes to target and fallout danger: thus in TR-82 risk areas (but not in lower risk areas), this characteristic behaves much like the "SES cluster" discussed above.
- (6) By contrast, variables having to do with population dynamics differentiate risk indices in lower TR-82 risk areas but not in high risk counties (except for target risk, where the higher the population growth, the higher the risk).
- (7) In the lower risk areas, the target and fallout risk indices are also generally higher with greater (positive) population dynamics, but higher risk of war goes with more negative measures of population change (loss of population, outmigration).
- (8) Indices pertaining to employment structure differentiate only higher and lower estimates of war likelihood and only in the TR-82 lower risk areas.
- (9) Thus in higher (TR-82) risk areas, the occupational structure measures do not yield any important differences in risk perception whether these have to do with the risk of war, target or fallout dangers.

What of policy relevance of such threat credibility data? The matter needs to be addressed, if briefly, at three distinct levels: that of policy problems (as differences between a desired/intended state of affairs and an actual one); that of policy issues (as to controversial, if not conflictual matters which call for, or perhaps require, public policy consideration); and that of policy options (as to basic strategies for acting on problems and/or issues). The final dimension, that of policy recommendations (as to what should be done, why and when and how) falls beyond the limited scope of this analysis.

It is, in this context, not unreasonable to assume that our Federal Government

- (a) does not consider a nuclear war to be impossible (zero probability), and
- (b) does not view a nuclear war to become a certainty in the future (or at least, over the planning horizon).



The nation's public appears to share this view: both in higher risk areas and in other areas; and generally, regardless of more detailed characteristics of the residential counties of the study respondents.

Thus there exists no policy problem as such.

There may, however, exist a policy issue and it is of the following kind: how high or low the probability estimates of nuclear war on the part of Government may be (more specifically, on the part of responsible agencies: the intelligence community, the Department of Defense and the Department of State) is impossible to ascertain at least with respect to data in the public domain. The probability then lies somewhere higher than zero but lower than certainty ( $p = 1$ ). The public estimates hover around the 50-50 marker. And there exist, clearly, differences in that many of our people view a nuclear war as rather probable, while others consider it to be unlikely or even very unlikely (though clearly neither impossible nor certain).

Depending on Government's (nonpublic) estimations, the issue is one as to whether those Americans who consider a nuclear war quite likely somehow need to become persuaded that the probabilities are lower than they think (though neither negligible nor zero) or whether those who feel that the likelihood is low need to be enlightened to the potential threat (so they come to view it as being higher than they have thought, though not a certainty). In a more conversational language, of course, the issue is one whether there are good grounds why our people ought to be "worried more," "or scared more" or, in turn, feel "less worried" or "less scared" about the likelihood of nuclear war.

Some extreme policy options certainly do not appear too realistic to consider: a preemptive war which, apart from its other effects, makes the "threat" certain rather than "only" credible; a preemptive surrender, via unilateral disarmament (say, by destruction of nuclear stockpiles and cessation of the production of any further nuclear weapons), which makes the likelihood of nuclear attack negligible, if not non-existent (the latter only if such nuclear disarmament were bilateral or even multilateral on the part of superpowers and all nuclear powers).

Other extremes, of the same variety, also do not appear to provide realistic policy options: to communicate publicly the circumstances and conditions under which the United States would launch a nuclear war; and,

on the other end of the spectrum, to communicate publicly that the United States would never and under no circumstances use nuclear weapons. Within the more realistic domain of credible threat policy options, the following exemplify the spectrum (though the options identified do not exhaust the possibilities):

- (a) Increased spending on strategic weapons as a signal that the threat is real, persistent, and perhaps even increasing.
- (b) Increased spending on civil defense and/or active defense systems conveying a parallel message.
- (c) Decreased, or stable, expenditures on strategic systems development and procurement as a signal that, perhaps, the risk of war remains unaltered (and relatively low) or even declining.
- (d) Decreased, or stable, emphasis on civil defense and/or active defense systems communicating essentially the same message.
- (e) Similarly, enhanced or decreased communications (education, information) emphasis on risks of war provide varying signals as to the changes in the actual risk and, presumably, in its perception by our public.

But, of course, nothing is as simple as it may appear to begin with (except for the rhetoric of war and peace as mentioned under /e/ above). Increased expenditures (whether on strategic systems, active or passive defenses) do not uniquely signal an increased threat-- and thus do not in and of themselves lead to changes in risk perceptions either. They may well often signal increased capabilities to deter war (by making it less and less acceptable to a potential adversary) and thus actually induce decreases in risk perceptions (and make nuclear war less credible). Accompanied with deterrence rhetoric (as such policy shifts invariably have been), this effect is more likely than the opposite.

In turn, decreases in strategic weapons, active and passive defense investments do not in themselves signal a decreasing level of threat (any more than a "nuclear freeze" at current levels of stockpiles would do so); to many, they may signal increased vulnerability of the nation with its corollary of greater opportunity for war on the part of an adversary (and thus a negative effect on overall deterrence). Under such circumstances, war risk estimates might actually rise.

Should this mean that risk perceptions are so fickle as to be unpredictable? That is, they may yield higher or lower risk indices for "one and the same policy"...This does not seem to be the case. The key discriminating factor is, one may postulate, the time gradient: "crash" or "crashlike" efforts (sharp investment increments over short time periods) for one and the same "policy" would signal increasing risks; efforts spread over longer time periods, in turn, do not have such effects.

Finally: public estimates of risk are obviously affected by exogenous factors and possibly dominantly so. Actions of adversaries (the Soviet Union in particular), and these actions as transmitted to our people by the media of communications (including media interpretations of our Government's interpretations of such actions) become a crucial factor in threat credibility estimates.

For the Federal Emergency Management Agency, the policy options related to the war threat credibility are, of course, the same as those faced by the Government as a whole. But there are more subtle considerations which amount to more FEMA-specific alternatives:

- (a) To ignore issues of war likelihood as such altogether (this would include ignoring, in terms of the public domain, potential civil defense contributions to deterrence).
- (b) To address questions of likelihood of war as such (thus allowing for an interpretation by some segments of the public that such estimates might be FEMA-generated).
- (c) To address war likelihood questions only by referring to estimates by other appropriate agency (such as the Central Intelligence Agency, the Defense Department, the State Department).
- (d) To ask, encourage, request, demand that such other appropriate agencies themselves address the war threat questions without FEMA itself having to do so.

In any event, the underlying issue, from FEMA's perspective is somewhat like this: is there a relative advantage in our people thinking that a nuclear war has a relatively high likelihood, or would it prove better, from civil defense perspective, if people thought war, while not impossible, was quite unlikely?

And, indeed: is there an advantage in public thinking that civil defense contributes to deterrence (in its strategic meaning) or is there more merit if the public were more assured that civil defense is a life-saving effort, a kind of insurance (as in the Kennedy years) against a low probability/high consequence risk?

The nature of language, for the most part, forces questions to be often asked in such "either/or" manner. The answers, in terms of eventual policy resolutions, however are not necessarily--and, indeed, only rarely--of the simple this-or-that variety. Rather, they have to do with subtle balancing of relative advantages and disadvantages across the whole spectrum of underlying problems and issues to which policy alternatives are addressed. Thus, for instance, some relevant admixture of "deterrence" and "insurance" thinking might be more benign from the civil defense perspectives and needs than either "all-out" deterrence or "all-out" insurance notions internalized in our body politic.

Yet, as has been stated before: the identification of a full spectrum of policy options (and even issues and problems), and their resolution in terms of recommended policy (given explicit standards by which options get evaluated) are matters which lie well beyond the scope of this particular exercise and cannot be dealt with adequately here.

When it comes to considering the target danger indices, clearly some salient policy problems exist. That is to say, such problem(s) exist if some reasonable assumptions are allowed: it would be optimal if people in high risk areas were fully aware that they reside in high risk areas, and if people in lower risk areas were also fully aware that their areas are at lower, if not no, risk. Although TR-82 high risk area residents estimate the target risk significantly higher than do other area residents, all indices reveal relatively high risk assessment.

Now there also exist significant policy issues: but these are essentially unrelated to the state and dynamics of public thinking at this time.

Examples of such crucial issues are the following ones: If certain scenarios regarding an enemy attack generate riskier and less risky areas of the country (in terms of target threat), as is the case with regard to TR-82, what would be the effects of modified realistic criteria on

the delineation of the target system (and thus an effect on the actual designations of high risk/lower risk areas)? How might the definitions of high risk/lower risk areas change over time and what information/knowledge (about enemy capabilities and/or intentions) would drive such changes--and with what consequences for civil defense planning (especially in so far as it is predicated on the possibilities of crisis relocation)?

There are, of course, options within options. Let, however, only some of the key ones be identified more explicitly:

- (1) FEMA might ignore the obvious problem of public misunderstanding regarding higher/lower risk areas and let, as it were, its civil defense plans--as reported or not reported or even misreported by the media--provide the clarification.
- (2) FEMA could opt to attempt to enlighten the public under normalcy conditions (crisis-free conditions) about differences between risk/lower risk areas.
- (3) FEMA might opt to act as under Option 1 above, but make detailed ex ante provisions to provide explicit public information and enlightenment under conditions of an incipient international crisis (in which the nuclear war risk appears to have been "objectively" increased).

Finally, the fallout risk data do not seem to present either a policy problem or a policy issue.

The potential fallout hazard is ubiquitous (though time-of-the-year scenario dependent to some extent, as it is well dependent on the eventual target system, attack magnitudes, modes of weapons deployment and the like). The specific technicalities in likely or plausible fallout differences are beyond the scope of adequate public comprehension no matter what information might be provided, under normalcy or even crisis conditions (it becomes exceptionally salient under attack and in immediate postattack conditions--a matter not referable to the data on hand, however).

Thus there are also, so to say, no "policy options" save for doing nothing at all (about the state of public thinking regarding fallout). Now, of course, there are "policy options": but the data drive none of them except for the "do nothing" alternative at this time.

It is then, perhaps, not too difficult to show, as has been attempted here, how public perspectives (in this instance, regarding threat credibility) bring to focus some policy problems, some issues, and how these bear on some key policy alternatives.

PART B

SURVIVABILITY

## VI. INTRODUCTION

Four items in the research probe the perceptions of survivability should a nuclear war ever occur.

"If a nuclear war started next week, how good are the chances that people around here would survive?"  
(Question 15, 1978 Instrument)

"How good would the chances be that people in this area would survive if they were in fallout shelters?"  
(Question 16, 1978 Instrument)

"How good would be the chances that people in this area would survive if they were in blast shelters?"  
(Question 19, 1978 Instrument)

"In general, how good would the chances be that people in this area would survive if they were evacuated to another location some distance away?"  
(Question 59, 1978 Instrument)

A few points can readily clarify the questions and their broader instrument (study) contexts.

The focus, in each instance, is on people in the "general" (though otherwise undefined) area of, and around, their residence. This means, of course, that the respondent is not asked to estimate survival chances of our people at large: but the cumulation of such area-by-area estimates does provide an aggregate perspective on national survivability (in the 48 contiguous states from which the sample was drawn).

The item on survival chances in "blast shelters" did not, in the instrument, directly follow the "fallout shelter" survival item. It was preceded by a question on support/nonsupport of fallout shelters (an item which followed the "fallout shelter" survival question), and an item which probed into the perceived need, in the respondent's area, for blast shelters.

The particular item was as follows:

"Around here, do you feel that shelters against radioactive fallout would be enough or do you believe that there ought to be stronger shelters constructed that could help protect people against primary effects of nuclear weapons as well; that is, against blast?"  
(Question 18, 1978 Instrument)

In turn, the final "survival-related" item (survival prospects upon evacuation) appeared much later in the instrument. In fact, it was asked



only after the research probe determined whether the respondents believed the United States and/or the Soviet Union did have "evacuation" plans; whether the President might activate such plans under any circumstances; whether people were likely/unlikely to evacuate spontaneously (in the midsts of a worsening international crisis); whether they might be inclined to evacuate their place of residence if they received news of Soviet evacuation; and whether they would evacuate if the President were to urge such action.

Deliberately, the term "relocation" or "crisis relocation" was used only in the context of "evacuate or relocate," "evacuation or relocation" on the probably very valid premise that the current FEMA terminology of "relocation" was, at the time, all but unfamiliar to most Americans while the idea of evacuation was not.

Deliberately, the item also did not mention "a safer location" as the destination of such a relocation/evacuation movement. It merely referred to "another location some distance away." This was done so as to minimize the possible effects of the allusion to increased "safety," an obvious desideratum for by far most people, which might have inflated both the likelihood of relocation/evacuation estimates as well as the survivability evaluations. In this respect, the data then must be construed to be conservative, erring as they most likely are on the side of more subdued estimations.

Now all four survivability items provided for five main response options: "very good," "fairly good," "about 50-50," "fairly bad," and "very bad" survival prospects. The four key survival-related items, as identified at the outset of this Chapter, have to do with civil defense credibility. In this instance, it is a version of effectiveness credibility, however, rather than one of threat credibility to which PART A of this paper was devoted.

In other words: how effective, with respect to survival prospects, would be fallout shelters (on the premise, explicit in the formulation of the question, that "area people would be in fallout shelters")? How effective, similarly, would blast shelters seem to be? How effective, along the same lines, might evacuation/relocation measures appear to our people?

Now the very first item of this effectiveness credibility series concerns survival chances "if war were to come next week." Thus it presupposes that the nation would have to do its best with whatever there may exist in the way of protective measures in the immediate future. As such then, the item anchors responses regarding survival in fallout shelters, in blast shelters, or upon relocation.

In other words, the first item probes into survival possibilities under then-extant conditions of civil defense--mostly unknown though these would prove to be to most respondents anyway. The items of fallout and blast shelters and on evacuation become then measures of changes from the prevailing state of civil defense on condition that people "would be in fallout shelters," or in "blast shelters," or "relocated."

Fallout shelters or blast shelters or relocation measures then could, in principle, yield negative effectiveness: this would be if the survival estimates under such sheltered or relocated conditions were even lower than the estimates in the event of a "next week's" war.

Such civil defense measures could also have essentially zero effectiveness: if survival chances in the postulated "next week's war" were just about the same as in a sheltered or relocated population.

And, of course, the shelter programs, fallout and/or blast, as well as relocation could have positive effectiveness in terms of the public perspective if the sheltered or relocated population estimated the survival chances to be improved over survivabilities in the "next week's war" environment.

These particular types of subject matter form the foci of this PART B of the report.

## VII. SURVIVABILITY: NEXT WEEK'S WAR

Above (Chapter VI), the anchorage role of the "survival chances in a next week's war" has been mentioned. What then is the nature of this anchorage?

Table 17 sums up the national results in terms of percentages.

Table 17  
SURVIVAL ESTIMATES IN A "NEXT WEEK'S WAR"

<u>Prospects</u>	<u>Percent</u>
Very good	1.2
Fairly good	11.3
About 50-50	29.3
Fairly bad	25.0
Very bad	30.2
Don't know/no answer	3.0

Clearly, these are anything but "optimistic" estimates. Only 12.5 percent of our people claimed that their area survival chances were "fairly good" or "very good" (the latter response characterizing only 1.2 percent of the populace!). And 41.8 percent thought that survival chances in a "next week's war" would be 50-50 or better.

A simple Survivability Index (or Likelihood of Survival Index) was again developed: "very good" survival responses were assigned a value of 100 ( $p = 1$  of survival, multiplied, for convenience, by 100); "fairly good" claims rated 75; "50-50" answers were given a value of 50; "fairly bad" reactions were assigned a value of 25; and "very bad" survival chances were given a value of zero ( $\emptyset$ ). The index then ranges again from 0 to 100: if all respondents had thought their survival chances (the chances of survival of people in their area) were "very bad," the value would be zero ( $\emptyset$ ). If all had thought that the survival prospects were "very good," the survival likelihood measure would have reached its maximum value of 100.

The summary index values are provided in Table 18.

Table 18  
 LIKELIHOOD OF SURVIVAL INDICES  
 (NEXT WEEK'S WAR)

	<u>Index</u>
All respondents	31.5
In TR-82 risk areas	30.3
In other areas	35.9

Two conclusions can clearly be drawn without a great deal of difficulty:

- (1) The survival prospects in a "next week's war" were seen as being quite low--with a likelihood of about .315 nationwide (implying nonsurvival of .685).
- (2) There exists a difference, though not a robust one, between TR-82 high risk area residents and others: in the riskier areas, the survival likelihood index is lower (30.3) than it is in the TR-82 "safer" areas (35.9).

Now Table 19 produces only two robust differences: one has to do with density patterns contrasting high with very low population densities; the other one concerns net migration flows over the decade of the 1960's and contrasts the very high growth with high growth areas, in terms of the net migration indices.

Two other important results are worth referring to. The index range is not a robust one, but the pattern is of some interest:

- (1) The lower the percentage of minority residents, the higher the survival estimates: where there are more than 25 percent minority residents, the index value is 29.0; in almost exclusively "white" counties, the value is 35.0 and it increases monotonically from higher to lower minority percentages.
- (2) The lower the median income of the areas, the higher the survival likelihood index: among residents in counties with median household incomes below \$8,000 per annum, the index amounts to 33.5. It has a value of 28.3 in areas with median income of over \$12,000 and also increases monotonically with decreasing median income categories.

Table 20 gives examples of the more typical counties which fall into the differentiated survival likelihood categories.

Table 19

HIGHER AND LOWER SURVIVAL LIKELIHOOD INDICES  
RESIDENTS OF TR-82 RISK AREAS

<u>Higher Survivabilities</u>		<u>Lower Survivabilities</u>	
<u>Characteristic</u>	<u>Index Value</u>	<u>Characteristic</u>	<u>Index Value</u>
Very low population density	35.7*	High population density	19.7
Very high net immigration	37.0	High net immigration	21.8

\*Countries with "very high density" (10,000 per square mile or more) yield an index value of 29.8 (close to the risk area resident average of 30.3).

Table 20

HIGHER AND LOWER SURVIVAL LIKELIHOOD  
INDICES: MORE TYPICAL COUNTIES  
(IN TR-82 HIGH RISK AREAS)

<u>Higher Survival Likelihood</u>	<u>Lower Survival Likelihood</u>
Sarpy, Nebraska	A. Jefferson, Louisiana
Orange, California	Santa Barbara, California
Prince Georges, Maryland	Madison, Alabama
Fairfax, Virginia	Anoka, Minnesota
Jefferson, Colorado	Suffolk, New York
Cleveland, Oklahoma	Montgomery, Maryland
	Du Page, Illinois
	B. Eaton, Michigan
	Anne Arundel, Maryland
	Arapahoe, Colorado
	Dade, Florida

The "higher survival likelihood" counties of Table 20 are not characterized by very low densities: thus it is other very low density counties (examples of which have already been provided) which account for that particular factor in its differentiation by higher and lower survival prospects.

But these counties have some other characteristics, categorized though they may be, in common: high population growth, fewer than average residents of 65 years of age and older, lower than average death rates, more post 1960 housing structures and fewer pre-1950 ones, very high residential mobility in the decade of the 1960s along with lower than average dollar value of such farms as exist.

In category A (Table 20) of counties where the survival estimates are particularly low, the areas have essentially the same characteristics as do the counties with much higher survival assessments: but residential mobility patterns are less pronounced, and there is not categorical uniformity in terms of the relation of the dollar value of farms to the average. Thus lower mobility into current residences in the decade of the 1960s and higher values of such farms as may exist differentiate between these two clusters of counties.

In turn, counties in category B (where survival likelihood indices are also low) are quite different in many respects: relatively low population density is coupled with high, though not very high, population

growth, the birth rate falls below the average, and value of owner occupied housing is high, though not very high.

If the population density factor were taken as the point of analytic departure, then it holds that counties with very low densities (of up to 100 people per square mile) where survival likelihood is higher (35.7), it turns out that all such counties are characterized by lower than average value of farmland per acre--the only other ecological trait they have in common.

In turn the "high density" counties (5,000 to 10,000 population per square mile) all have fewer than average percentages of workers in construction industries, and, at the same time, no population of farmers (or else, a percentage which was too negligible for the Bureau of the Census to report as such).

Table 21 presents the major differences, by characteristics of counties, in terms of survival likelihood estimates. For the most part, population dynamics characteristics "enter" into these differences: the survival indices tend to be higher in older and more stable (less changing) communities and lower in counties with greater population shifts in the 1960's.

The counties which are illustrative of at least the central features of the profile of Table 20 from which the residents provided higher relative survival likelihood indices also tend to: have an above average of residents who are 65 years of age and older, about average (medium) percentage of minority residents, below average employment in services, and below average percentage of housing constructed after 1960.

The counties yielding the lower survival estimates, in turn, have fewer elderly residents (than the average), more children (5 years of age and younger) and low, though not very low, percentage of those whose formal education involved the completion of high school or more.

Table 22 gives examples of the counties which more or less typify the higher and the lower survivability patterns.

Table 21

HIGHER AND LOWER NEXT WEEK'S WAR SURVIVAL ESTIMATES  
IN OTHER THAN TR-82 RISK COUNTIES

<u>Higher estimates</u>		<u>Lower estimates</u>	
<u>Characteristics</u>	<u>Index Value</u>	<u>Characteristics</u>	<u>Index Value</u>
Low population growth	40.2	Higher population growth	30.9
Higher immigration	39.6	Very high immigration	31.5
Higher outmigration	38.9		
Above average birth rates	37.5	Below average birth rates	29.6
Below average death rates	39.2	Above average death rates	30.9
Above average percent of pre-1950 structures	39.1	Below average percent of pre-1950 structures	29.0
Lower percent residential change	37.6	High percent residential change	27.5
Lower than average dollar value of farms	38.0	Higher than average value of farms	29.0



Table 22

COUNTIES WITH HIGHER AND LOWER  
SURVIVAL LIKELIHOOD INDICES  
(IN OTHER THAN TR-82 RISK AREAS)

<u>Higher estimates</u>	<u>Lower estimates</u>
Otsego, New York	Pecos, Texas
Madison, Nebraska	Hamblen, Tennessee
Carroll, Indiana	Limestone, Alabama
Reno, Kansas	
Chemung, New York	
Clairborne, Tennessee	
Franklin, Vermont	

The following more general conclusions may be drawn:

- (1) In no area type does the survivability index exceed a value of about 40 (in lower risk areas, the index yields 40.2 in counties with low population growth); its lowest value (19.7) occurs in high density counties in TR-82 risk areas though not in the most densely populated counties.
- (2) Thus regardless of the area characteristics, between 60 percent and about 82 percent of our people are, by implication, not expected to survive a "next week's" nuclear war.
- (3) The higher (TR-82) risk counties differ from lower risk counties in the pattern which differentiates larger from smaller values of the survival index: in higher risk areas, greater population shifts (in terms of dynamics indices) by and large produce higher survivability indices, whereas in the lower risk areas, it is the less changing counties from which higher survivability indices were derived.
- (4) The obviously low likelihood of survival indices associated with the postulated "next week's war" seem to suggest that our people's thinking may be somehow distributed along the following lines:

- (a) Despite civil defense programs, such as they were in the very late 1970s, survival chances would be very low--hence, measures of civil defense would be seen as largely quite ineffective.
- (b) Such civil defense programs as may have been in existence at the time were viewed as inadequate (low effectiveness) but perhaps "other measures" or "other programs" could enhance survival prospects to some extent, if not significantly.
- (c) There was, in effect, hardly any protection program in place at the time so that the postulated "next week's war" would catch our people essentially unprepared.

By considering now the "effect" of various protection approaches (fallout shelters, blast shelters, relocation) on these anchoring survivability indices, issues such as the above can be to an important degree resolved.

### VIII. SURVIVABILITY: IN FALLOUT SHELTERS

The response patterns ranging from "very good" to "very bad" survival prospects for residential area people "if they were in fallout shelters," are the same as those used in the "next week's war" survival item. Thus the likelihood of survival index if in fallout shelters is derived exactly in the same way, discussed briefly in Chapter VII above, as the "next week's war" survival likelihood.

Table 23 first presents the nationwide data in percentage terms as the Tables's basic component. But since the "next week's war" data are used as a kind of anchorage relative to which effectiveness or ineffectiveness of various programs might be evaluated, the tabulation also gives a Difference Index and a Ratio Index.

The former measure represents the percentage difference (which could be positive, zero or negative, of course) between the survival perceptions for a fallout-sheltered population and the anchorage percentage for survival in "next week's war" (of Table 17).

The ratio index, in turn, expresses the factor which characterizes the relation between fallout-sheltering survival and the "next week's war" survivabilities--the latter percentages being, of course, the denominators of the ratio.

Table 23  
SURVIVABILITY IF IN FALLOUT SHELTERS

Propsects	Percent	Difference Index**	Ratio Index**
Very good	11.8	+10.6	9.8
Fairly good	32.5	+21.2	2.9
About 50-50	34.0	+ 4.7	1.2
Fairly bad	12.6	-12.4	.5
Very bad	5.5	-24.7	.2
Don't know/no answer	3.6	NA*	NA*

\*Not applicable

\*\*Data of Table 17 form the baseline.

Obviously, Table 23 says the following:

- (1) Survival chances for a fallout sheltered population are enhanced quite sharply when compared with survival likelihood in a "next week's war."
- (2) "Very good" survivability estimates increase by a factor of almost 10; "very bad" survivability estimates decline by a factor of 5.
- (3) In all 78.3 percent of these respondents identified their survival chances to be at least 50-50--whereas only 41.8 percent fell into these categories under the postulated "next week's war" conditions--an increase of 36.5 percent as a crude measure of effectiveness credibility for the population as a whole.

In Table 24 the aggregate results are given in terms of the derived survival likelihood indices.

Table 24  
SURVIVAL LIKELIHOOD (FALLOUT SHELTERS) INDICES

	<u>Survival Index</u>	<u>Difference Index*</u>	<u>Ratio Index*</u>
Total sample	58.4	+26.9	1.85
In TR-82 risk areas	57.6	+27.3	1.90
In Other areas	61.5	+26.4	1.71

\*Data of Table 18 are the baseline for both  
the Difference and Ratio indices.

The increment in survivability is clearly just about the same in higher as in other risk areas (the Difference Index). The Ratio index increases survival in TR-82 risk areas by a factor of 1.9 and in other areas by a somewhat lower factor of 1.7--this, of course, reflects the fact that the baseline measures (Table 18) have fewer estimated survivors in higher risk areas than in other areas, and while the difference persists under fallout protection (57.6 index value as compared with 61.5), it becomes sufficiently smaller to generate the ratio index result.

Since the questionnaire item explicitly referred to "area people being in fallout shelters," and thus essentially all being fallout-sheltered, it is difficult not to conclude:

- (1) Fallout shelters were seen as a credible measure to increase survival chances (on balance, by about a factor of 1.8).
- (2) But the survival likelihood indices for a fallout-sheltered population yield estimates of survivability of only around 60 percent (slightly higher in other than TR-82 areas than in higher risk areas)--and this would certainly not suggest complacency about effectiveness of civil defense measures which provide fallout shelter protection. There exists then no illusion that somehow all Americans, or by far most, would survive even if they were protected against fallout: a non-survival rate of some 40 percent is implied.

Since survival opportunities of our people should deterrence fail represent the strategic objective of all civil defense measures of the Federal Emergency Management Agency, it is perhaps advisable to provide more detailed data on the effectiveness credibility dimension.

Tables 25 through 29 present survivability indices for both TR-82 higher risk and for other national areas. Each Table of the set contains a cluster of county characteristics with an underlying common (conceptual, not necessarily empirical) dimension.

In Table 25 "global indicators" are used (such as population density). Table 26, in turn, contains the data in terms of "population composition" traits while Table 27 utilizes "population dynamics" indices (characteristics of population change). Table 28 pertains to a set of indices bearing on occupational structure of the counties, and the last Table of the set, Table 29, clusters "socio-economic status" traits.

The data of Table 25, with its focus on "global indicators" as county characteristics shows the following main patterns:

- (1) Gross survivability indices (for a fallout sheltered population), as shown in Column 1 of the Table, are generally higher in lower risk areas than they are in TR-82 high risk counties.
- (2) In lower risk areas, where there are fewer pre-1950 structures (thus counties with older housing stock) and above average post 1960 constructed units, the survivability indices are slightly lower than in corresponding types of high risk areas.

Table 25

## SELECTED GLOBAL CHARACTERISTICS OF COUNTIES AND SURVIVABILITY INDICES (FALLOUT SHELTERS)

Characteristics	In TR-82 Risk Areas			In Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index*	Difference Index	Ratio Index*
A. POPULATION DENSITY						
<= 100	64.6	+28.9	1.81	62.1	+26.5	1.74
100 <= 1,000	59.6	+28.6	1.92	59.9	+23.2	1.63
1,000 <= 5,000	55.4	+25.5	1.85	no counties in lower risk areas		
5,000 <= 10,000	48.8	+29.1	2.48	with densities in excess		
10,000 <	55.4	+25.6	1.86	of 1,000		
B. TOTAL FARM ACREAGE						
Below average	56.0	+27.4	1.96	64.0	+25.4	1.66
Above average	59.4	+27.0	1.83	59.8	+25.5	1.74
C. PERCENT LAND IN FARMING						
Below average	55.3	+27.0	2.05	62.5	+26.9	1.76
Above average	60.9	+27.4	1.82	61.2	+25.3	1.70
D. PERCENT OF PRE-1950 HOUSING STRUCTURES						
Below average	58.1	+26.7	1.85	52.3	+23.3	1.80
Above average	57.0	+27.8	1.95	65.8	+26.7	1.68

Table 25 (continued)

Characteristics	In TR-82 Areas			In Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*
E. PERCENT OF POST 1960 HOUSING STRUCTURES						
Below average	57.4	+26.9	1.89	63.6	+25.8	1.69
Above average	57.9	+27.8	1.92	57.0	+25.4	1.80
F. PERCENT URBAN						
<= 25				66.4	+30.1	1.82
25 <= 50	62.2	+28.9	1.87	61.8	+25.5	1.70
50 <= 75	60.0	+26.8	1.81	61.1	+24.0	1.65
75 <= 100	57.5	+27.2	1.90	49.3	+21.8	1.79
100	54.0	+26.1	1.94	no cases in the sample		

\*As in all subsequent Tables of this type, the reader will obtain, for each type of area/county the survivability indices under "next war conditions" for the Difference Index by subtracting the index value from the magnitudes presented in the first column. For the Ratio Index, the anchorage/baseline data are obtainable by dividing the index of column one by the factor (ratio).

Table 26

SELECTED POPULATION COMPOSITION CHARACTERISTICS OF THE COUNTIES  
AND SURVIVABILITY INDICES (FALLOUT SHELTERS)

Characteristics	TR-82 High Risk Areas				Survivability Index	Difference Index*	Ratio Index	Survivability Index	Difference Index*	Ratio Index*
	Survivability Index	Difference Index*	Ratio Index	Survivability Index						
A. PERCENT MINORITY RESIDENTS										
25 =>	56.5	+27.5	1.95	J 63.6**						
15 <= 25	57.6	+28.3	1.96						+30.2	1.90
5 <= 15	57.0	+27.1	1.91					53.5	+21.5	1.67
5 >	59.4	+26.2	1.79					63.3	+25.3	1.66
B. PERCENT UNDER 5 YEARS OF AGE										
Below average	56.9	+27.0	1.90					62.2	+25.1	1.68
Above average	59.8	+27.9	1.87					60.1	+26.8	1.80
C. PERCENT 65 YEARS AND OLDER										
Below average	57.7	+27.2	1.89					57.3	+24.7	1.76
Above average	57.4	+27.5	1.92					64.6	+26.3	1.69



Table 26 (continued)

Characteristics	In TR-82 High Risk Areas				
	Survivability Index	Difference Index*	Ratio Index	Survivability Index	Difference Index* Ratio Index*
F. PERCENT OWNER OCCUPANCY OF DWELLING UNITS					
<= 25	55.7	+29.3	2.11	] 61.0 64.5	In "Other areas," there are no counties in these categories. +25.5 +26.5
25 <= 45	54.0	+25.2	1.88		
45 <= 55	56.3	+26.2	1.87		
55 <= 75	58.8	+27.7	1.89		
75 <	53.8	+25.3	1.89		

\*For explanation see text. For the relation of these indices to the anchoring "next week's war" likelihood of survival index, see footnote under Table 25 above.

\*\*Here, and hereafter, ] signifies that categories were combined in the lower risk counties: this results from the fact that there are too few respondents in each separate category (or at least in one of them) to provide a more reasonable estimate.

Table 27

## SELECTED POPULATION DYNAMICS CHARACTERISTICS OF COUNTIES AND SURVIVABILITY INDICES (FALLOUT SHELTERS)

Characteristics	TR-82 Risk Areas			Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*
A. POPULATION GROWTH 1960-1970						
<= 0	55.3	+28.7	2.08	69.1	+29.7	1.75
0 <= 10	59.4	+27.6	1.87	65.6	+25.4	1.63
10 <= 25	59.2	+26.1	1.79	58.9	+28.0	1.79
25 <= 50	56.9	+28.3	1.99	53.0	+18.5	1.54
50 <	51.4	+24.5	1.91			
B. NET MIGRATION 1960-1970						
<= -10	58.5	+29.8	2.04	68.2	+29.3	1.75
-10 <= 0	59.2	+27.6	1.87	62.0	+28.6	1.86
0 <= 10	58.7	+25.1	1.75	62.0	+25.3	1.69
10 <= 25	56.5	+27.2	1.93	60.1	+20.5	1.52
25 <= 50	51.3	+29.6	2.35	51.1	+19.6	1.62
50 <	60.0	+23.0	1.62			
C. PERCENT WHO MOVED TO CURRENT RESIDENCE 1960-1970						
<= 40	55.8	+29.9	2.15	63.6	+26.0	1.69
40 <= 50	57.7	+27.4	1.90			
50 <= 60	57.4	+27.1	1.89	61.1	+26.6	1.77
60 <	57.8	+26.7	1.86	49.3	+21.8	1.79
D. BIRTH RATE						
Below average	55.5	+26.7	1.93	62.5	+25.0	1.67
Above average	59.4	+27.7	1.87	57.7	+28.1	1.95
E. DEATH RATE						
Below average	58.3	+26.8	1.85	58.0	+27.1	1.88
Above average	56.3	+28.0	1.99	63.9	+24.7	1.63

\*The indices are explained in the text. See also footnote to Table 25 for further explanation.

Table 28

OCCUPATIONAL STRUCTURE CHARACTERISTICS OF THE COUNTIES  
AND SURVIVABILITY INDICES (FALLOUT SHELTERS)

Characteristics	TR-82 High Risk Areas			Other Areas		
	Survivability	Difference	Ratio	Survivability	Difference	Ratio
	Index	Index*	Index*	Index	Index*	Index*
A. PERCENT EMPLOYED IN MANUFACTURING						
Below average	57.8	+27.1	1.92	61.0	+25.6	1.71
Above average	57.2	+27.4	1.92	62.2	+25.8	1.71
B. PERCENT EMPLOYED IN WHOLESALE/RETAIL						
Below average	56.3	+26.7	1.90	62.8	+26.4	1.72
Above average	58.3	+27.5	1.89	58.9	+24.1	1.69
C. PERCENT EMPLOYED IN SERVICES						
Below average	58.2	+28.4	1.95	63.6	+30.9	1.94
Above average	57.0	+26.2	1.85	57.0	+24.9	1.78
D. PERCENT EMPLOYED IN EDUCATION						
Below average	57.7	+27.5	1.94	65.0	+26.9	1.71
Above average	57.3	+25.7	1.81	56.3	+23.6	1.72
E. PERCENT EMPLOYED IN CONSTRUCTION						
Below average	57.5	+26.9	1.88	61.9	+25.3	1.69
Above average	58.0	+29.8	2.06	60.7	+26.5	1.77
F. PERCENT POPULATION OF FARMS						
<= 0	55.3	+26.5	1.95	53.8	+21.3	1.66
0 <= 1	60.3	+28.3	1.88			
1 <= 5	65.8	+26.9	1.69	58.3	+26.7	1.84
5 <= 15				62.0	+24.6	1.66
15 <	64.4	+27.8	1.92	70.8	+30.8	1.77

\*As in Table 25 and explanation in the body of the text.

Table 29

SOCIOECONOMIC STATUS CHARACTERISTICS OF COUNTIES AND  
SURVIVABILITY INDICES (FALLOUT SHELTERS)

Characteristics	TR-82 Risk Areas			Other Areas		
	Survivability	Difference	Ratio	Survivability	Difference	Ratio
	Index	Index*	Index*	Index	Index*	Index*
A. PERCENT WITH HIGH SCHOOL EDUCATION OR MORE						
<= 33.3	52.9	+27.5	2.08	69.9	+32.4	1.86
33.3 <= 45				58.1	+26.3	1.83
45 <= 55	59.9	+29.4	1.96	61.6	+23.2	1.60
55 <= 66.7	57.7	+25.9	1.81			
66.7 <	50.5	+21.3	1.73	57.9	+22.5	1.64
B. PERCENT FAMILIES WITH FEMALE HEAD						
<= 7.5	59.3	+28.9	1.95	59.1	+21.7	1.58
7.5 <= 10	56.4	+24.2	1.75	62.6	+27.6	1.79
10 <= 12.5	58.3	+31.3	2.16			
12.5 <= 15	59.6	+27.4	1.85	61.5	+24.8	1.68
15 <	53.8	+26.7	1.98			
C. PERCENT FAMILIES BELOW POVERTY LINE						
<= 5	52.2	+24.6	1.89	53.8	+12.6	1.30
5 <= 10	58.1	+27.5	1.90	60.2	+24.7	1.70
10 <= 15	61.3	+28.2	1.85	58.6	+26.6	1.83
15 <	56.6	+30.8	2.19	66.2	+28.7	1.76
D. MEDIAN INCOME						
<= \$ 8,000	64.0	+30.5	1.91	65.8	+27.7	1.73
\$ 8,000 <= \$10,000	59.1	+28.5	1.93	61.5	+26.7	1.77
\$10,000 <= \$12,000	57.5	+27.2	1.90	53.4	+19.4	1.57
\$12,000 <	51.1	+22.8	1.80	no cases in the sample		

Table 29 (continued)

Characteristics	TR-82 Risk Areas			Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*
E. MEDIAN DOLLAR VALUE OF OWNER OCCUPIED HOUSING UNITS						
$\leq \$10^4$ **	60.4	+26.7	1.79	64.1	+28.5	1.82
$\$10^4 < \$10^{4.2}$						
$\$10^{4.2} < \$10^{4.4}$	58.7	+28.8	1.96	64.0	+27.3	1.74
$\$10^{4.4} < \$10^{4.6}$	50.2	+23.8	1.90	54.7	+20.1	1.58
				no cases in the sample		
F. AVERAGE 1969 VALUE OF FARM						
Below average	60.7	+28.7	1.90	64.3	+26.3	1.69
Above average	55.4	+26.2	1.90	53.2	+23.4	1.78
G. AVERAGE DOLLAR VALUE PER ACRE OF FARM LAND						
Below average	57.6	+25.1	1.77	6.15	+25.6	1.71
Above average	60.2	+34.1	2.31	no cases in the sample		
H. PER CAPITA LOCAL GOVERNMENT EXPENDITURES						
$\leq \$150$	63.6	+33.4	2.10	64.4	+29.6	1.85
$\$150 < \$200$	59.6	+27.7	1.87	66.1	+27.2	1.70
$\$200 < \$250$	58.5	+28.2	1.93	62.2	+23.0	1.59
$\$250 < \$300$	55.2	+25.5	1.86	53.5	+21.1	1.65

\*Indices as explained in text and in footnote of Table 25.

\*\* $10^4$  represents \$10,000, of course.  $10^{4.2}$  amounts to \$15,848 and  $10^{4.4}$  is \$25,118.

- (3) In highly urbanized lower risk areas in the lower risk category, the survivability index is lower, and rather significantly so (49.3 as compared with 57.5), than it is in parallel high risk areas.
- (4) All difference indices, both in high and lower risk areas are positive and all lie essentially between 20 and 30--values which represent the likelihood of survival increment over survivability in a "next week's war."
- (5) The lowest index value, 21.8, occurs again in the highly urbanized lower risk areas, while the highest survivability increment is noted in lower risk areas with low level of urbanization (30.1).
- (6) The survivability index variability is greater in lower than in high risk areas.
- (7) The ratio index, in turn, has its greatest difference in TR-82 high risk areas: in densely populated counties (with 5,000 to 10,000 residents per square miles), fallout shelters are seen as enhancing survival prospects by a factor of 2.48; in counties with very low density, the factor amount to 1.81.
- (8) The ratio indices are consistently higher among residents from lower risk areas: this, of course, is essentially a by-product of the fact that survival chances in the postulated "next week's war" are consistently higher in the lower risk areas so that the index base is higher and it takes more of a survivability increment to produce high ratio measures.

Table 26 suggests the following:

- (1) In high risk areas, there is hardly any variation in the survivability index or, for that matter, in terms of the difference measure, itself indicative of the likelihood value increase when comparing fallout protected and "next week's war" population; the ratio indices are also quite homogeneous, with the highest value at 2.11 (in counties with low owner occupancy of housing units) and lowest value of 1.87 (where the population of under 5 years of age exceeds the average, and owner occupancy is about average).

- (2) In the lower risk areas, once again there is somewhat more variability: the survivability index high of 64.6 (with above average numbers of elderly citizens) can be contrasted with the low value of 53.5 (with about 5 to 15 percent minority residents: while the index reaches a value of 63.6 in counties with more than 15 percent minority dwellers).
- (3) The basic index is again consistently higher in the lower risk than in higher risk counties--it falls slightly below the value of that of the high risk counties (77.3 compared with 57.7) only in areas with below average percentages of elderly residents.
- (4) All ratio indices are lower in high risk than in lower risk counties.

Considering factors bearing on population dynamics, as in Table 27, the following basic conclusions may be stated:

- (1) The variation in survivability indices, and even more so in the difference measure, is relatively low.
  - (a) In low population growth areas, the index is higher (59.4) than in high growth areas (51.4).
  - (b) In areas of high immigration (over 50 percent during the decade), the index has its high value of 60, while the low of 51.3 characterizes counties in the next highest immigration category (25 to 50 percent).
- (2) Several ratio indices exceed the factor value of 2 (hence, the anticipated survivability would more than double if people were fallout-sheltered as compared with "next week's war" population):
  - (a) In counties with some decline in population, the factor amounts to 2.08.
  - (b) In counties with higher negative net migration (outmigration exceeding immigration by more than 10 percent), the value turns out to be 2.04; and it is 2.35 in counties with high net migratory population gain (25 to 50 percent).

- (3) In the lower risk areas:
  - (a) The higher the population growth during the decade of the 1960s, the lower the survival likelihood index.
  - (b) The higher the population gain due to net migration patterns, the lower the survivability index.
  - (c) The higher the residential mobility, the lower the survival likelihood measure.
- (4) The survival likelihood indices are generally higher in lower than in high TR-82 risk areas, except:
  - (a) In lower risk counties compared with higher risk ones where population growth exceeded 25 percent.
  - (b) In counties where net migration exceeded 25 percent during the decade.
  - (c) In counties with very high residential mobility.
  - (d) In counties with an above average birth rate, but below average death rate.
- (5) In turn, the ratio indices are higher in the TR-82 high risk areas than in lower risk areas, except in counties with lower than average birth, but higher than average death, rates.

Table 28 data of occupational structure characteristics of the residential counties of the respondents reveal basically no differences. In lower risk areas, the higher the percentage of population of farms, the higher the survivability index, a pattern also suggested, but not quite replicated, in the high risk counties.

Finally, the results of Table 29 can be summarized:

- (1) In both higher and lower risk counties, the higher the median income, the lower the survival index.
- (2) In both types of counties, the lower the value of owner occupied housing, the higher the survival indices.
- (3) In high risk areas, counties with relatively few high school graduates, with medium percentage of female headed households, and more than 15 percent below the poverty line, while average dollar value of farms lies above the average the ratio indices indicate more than doubling of fallout sheltered survivabilities as they do in counties with low local government per capita expenditures.



Clearly, the survivability indices, both in high risk and lower risk areas, display the greatest differences, such as these are, as a function of basic socioeconomic characteristics of the counties: typically, the less well-to-do areas yield higher likelihood of survival measures than do the less well-to-do counties.

In the high risk areas, illustrative of the higher survival estimates might be counties such as Tom Green, Texas; or Cumberland, North Carolina; Johnson, Missouri. In the lower risk areas, this higher survival expectation pattern is typified by counties such as DeSoto, Florida; Chatham, North Carolina; or Marlboro, South Carolina.

In the lower survival likelihood indices in high risk areas, in turn, characterize counties like Montgomery, Maryland; Contra Costa, California; or San Mateo, California.

In lower risk areas, the pattern is reasonably well illustrated by such counties as Hampshire, Massachusetts; Ottawa, Michigan; or Sheboygan, Wisconsin.

The lower risk counties also vary in the survival likelihood of a fallout sheltered population in terms of key population dynamics variables (which do not appear to play the same strategic role in the TR-82 high risk areas): low growth and negative growth counties generally yielded higher survival indices than did high growth, high mobility counties. Clarendon and Marlboro Counties (South Carolina) as well as such counties as Jackson, Arkansas, are representative of the higher survival estimates in terms of the population dynamics dimension; Arlington, Virginia; Riverside, California or Sarasota, Florida.

The difference indices generally fail to produce any robust differences whether in higher or lower risk areas; their values tend to be somewhat higher in high risk areas, a fact accounted for by noting that "next week's war" survival indices are, to begin with, lower in these counties.

In terms of the ratio index (measuring the factor by which survival chances of a fallout sheltered population are enhanced over survivabilities in the "next week's war" situation), there exists little variation in the lower risk areas and the index never exceeds its doubling value.

In the high risk counties, values in excess of 2 are, however, noticeable basically in low growth (in fact, negative growth) counties with lower indices of socioeconomic well-being. But, of course, all indices

are positive (and the ratios are well beyond 1). This holds for all categories of respondents and both in high and lower risk areas.

None of the indices, at the same time, tend to approach their positive maximum values. Thus regardless of the residential (county) setting, our people see fallout shelters as a modestly effective way to provide protection against the hazards of nuclear war. They increase survival prospects roughly by a factor of between 1.5 and 2.4--with by far most indices in the 1.7 to 1.9 range.

Whether such "payoffs" in terms of survival appear adequate, and worth the required national, state and local investments of money and effort becomes then a key question: to the extent to which civil defense programs based on fallout sheltering notions would be acceptable to the population, it would be fair to conclude that the respondents adjudge the effort to be worthwhile, and at least tolerable if not adequate. By contrast, lack of acceptability of fallout shelter programs and concepts would signify that the perceived gains in survivability are simply "not enough" and that, perhaps, civil defense activities so oriented may be somewhat less than worthwhile.

Such matters, of course, need to be addressed: this is done in a later section of this report quite explicitly.

## IX. SURVIVABILITY: IN BLAST SHELTERS

As before, the basic study data will be considered first. Table 30 presents the percentages of respondents in the distinct response categories along with difference and ratio indices. The latter measures were derived in the same way as they were in the analysis of survivability perceptions given fallout sheltered (Chapter VIII above). Thus they are based on data presented in Chapter VII.

Table 30

### SURVIVAL ESTIMATES FOR PEOPLE IN BLAST SHELTERS

<u>Prospects</u>	<u>Percent</u>	<u>Difference Index**</u>	<u>Ratio Index**</u>
Very good	19.6	+18.4	16.3
Fairly good	29.2	+17.9	2.6
About 50-50	29.9	+ 0.6	1.0
Fairly bad	6.7	-18.3	.3
Very bad	5.2	-25.0	.2
Don't know/no answer	9.4	NA*	NA*

\*Not applicable

\*\*Data of Table 17 are the baseline

The following conclusions may highlight the main results provided in Table 30:

- (1) "Fairly bad" and "very bad" survival prospects for a blast-sheltered population characterize only some 11.9 percent of the respondents.
- (2) The percentage of those who really could not answer the question comes to over 9 percent--a doubling as compared with the fallout protection question or, for that matter, with estimates of survival in a "next week's war."
- (3) "Very good" survival chances are seen by 16.3 times as many respondents under the blast shelter conditions than under "current" ("next week's war") circumstances; and these prospects, in turn, are 1.66 times higher than are the corresponding estimates (Chapter VIII above) for a fallout protected population.

The likelihood indices, and corresponding difference and ratio measures show the pattern of responses for higher and lower risk areas. Table 31 contains the summary data.

Table 31  
SURVIVAL LIKELIHOOD (BLAST SHELTERS) INDICES

	<u>Survival Index</u>	<u>Difference Index</u>	<u>Ratio Index</u>
Total sample	64.2	+32.7	2.04
In TR-82 high risk areas	63.7	+33.4	2.10
In other areas	65.8	+29.9	1.83

Thus the expectation of surviving, if in blast shelters, is higher in lower than higher risk areas though certainly not much so. But the relative survival measures, the difference and ratio, show higher "payoff" in TR-82 high risk areas than in other parts of the nation.

A comparison with Table 24 (on fallout shelter indices) shows that all estimates of Table 31 are higher though only modestly so.

Tables 32 through 36 parallel Tables 25 through 29 to provide detailed data on perceptions of survivability by residents of demographically different counties if our people were in blast shelters. A direct comparison of the two sets of tabulations leads to some immediate, and important, conclusions:

- (1) The survivability indices under blast-sheltering conditions are all higher than are the corresponding likelihood estimates for the fallout shelter posture.
- (2) In TR-82 high risk areas, the same pattern holds for the difference and ratio measures: thus increments in survivability in blast shelters exceed increments in survivability in fallout shelters when both indices are anchored in survival likelihood in a "next week's war"; the factors by which survival chances are enhanced in blast over fallout shelters relative to the baseline data of "next week's war" are similarly higher.
- (3) In lower risk areas, the key pattern is also noticeable, but there are some exceptions: in types of counties identified below, the fallout sheltered population is seen as having better survival prospects than a blast sheltered population in terms of the difference and ratio measures:

Table 32

SELECTED GLOBAL CHARACTERISTICS OF COUNTIES AND  
SURVIVABILITY INDICES (IN BLAST SHELTERS)

<u>Characteristics</u>	<u>In TR-82 Risk Areas</u>			<u>In Other Areas</u>		
	<u>Survivability Index</u>	<u>Difference Index*</u>	<u>Ratio Index*</u>	<u>Survivability Index</u>	<u>Difference Index*</u>	<u>Ratio Index*</u>
A. POPULATION DENSITY						
<= 100	70.0	+34.3	1.96	65.8	+30.2	1.85
100 <= 1,000	67.6	+36.6	2.18	66.0	+29.3	1.80
1,000 <= 5,000	60.6	+30.7	2.03	no counties in lower risk		
5,000 <=10,000	53.2	+33.5	2.70	areas with densities in		
10,000 <	59.4	+29.6	1.99	excess of 1,000		
B. TOTAL FARM ACREAGE						
Below average	61.9	+33.5	2.18	67.8	+29.8	1.78
Above average	67.2	+32.9	1.96	64.1	+30.2	1.89
C. PERCENT LAND IN FARMING						
Below average	61.4	+33.2	2.18	63.8	+28.5	1.81
Above average	67.8	+32.9	1.94	66.8	+31.2	1.86
D. PERCENT OF PRE-1950 HOUSING STRUCTURES						
Below average	64.8	+33.4	2.06	55.1	+26.1	1.90
Above average	62.5	+33.3	2.14	71.0	+31.9	1.82

Table 32 (Continued)

Characteristics	In TR-82 Risk Areas			In Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*
E. PERCENT OF POST-1960 HOUSING STRUCTURES						
Below average	62.8	+32.3	2.06	70.7	+38.0	2.16
Above average	65.2	+35.1	2.17	55.5	+23.8	1.75
F. PERCENT URBAN						
<= 25				64.8	+28.5	1.78
25 <= 50	70.3	+37.6	2.13	69.2	+32.9	1.91
50 <= 75	69.2	+36.0	2.08	67.1	+30.0	1.81
75 <= 100	64.1	+33.8	2.12	53.5	+26.0	1.94
100 <	56.2	+28.3	2.01	no cases in the sample		

Table 33

SELECTED POPULATION COMPOSITION CHARACTERISTICS OF THE  
COUNTIES AND SURVIVABILITY INDICES (BLAST SHELTERS)

Characteristics	TR-82 High Risk Areas			Other Areas			
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*	
A. PERCENT MINORITY RESIDENTS							
25 =<	60.4	+31.4	2.08	]	65.4	+32.0	1.96
15 <= 25	64.4	+35.1	2.20				
5 <= 15	64.3	+34.4	2.15		55.4	+23.4	1.73
5 >	64.3	+31.1	1.94		69.5	+31.5	1.83
B. PERCENT UNDER 5 YEARS OF AGE							
Below average	63.1	+33.2	2.11		66.7	+29.6	1.80
Above average	65.8	+33.9	2.06		64.0	+30.7	1.92
C. PERCENT 65 YEARS AND OLDER							
Below average	64.9	+34.4	2.13		62.4	+29.8	1.91
Above average	61.5	+31.6	2.06		69.0	+30.7	1.80
D. PERCENT OWNER OCCUPANCY OF DWELLING UNITS							
<= 25	61.2	+34.8	2.32	]	no counties in these categories		
25 <= 45	58.5	+29.7	2.03				
45 <= 55	61.3	+31.2	2.04	]	65.1	+29.6	1.83
55 <= 75	65.5	+34.4	2.11				
75 <	59.0	+30.5	2.07		69.6	+31.6	1.83

Table 34

SELECTED POPULATION DYNAMICS CHARACTERISTICS OF COUNTIES  
AND SURVIVABILITY INDICES (IN BLAST SHELTERS)

Characteristics	TR-82 Risk Areas			Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*
A. POPULATION GROWTH 1960-1970						
<= 0	59.6	+33.0	2.24	73.8	+34.4	1.87
0 <= 10	64.7	+32.9	2.03	66.0	+25.8	1.64
10 <= 25	66.3	+33.2	2.00	66.2	+35.3	2.14
25 <= 50	64.9	+36.3	2.27	] 56.8	+22.3	1.65
50 <	54.7	+27.8	2.03			
B. NET MIGRATION 1960-1970						
<= -10	62.2	+33.5	2.17	66.5	+27.6	1.71
-10 <= 0	66.2	+34.6	2.03	67.2	+33.8	2.01
0 <= 10	64.0	+30.4	1.90	71.4	+34.7	1.94
10 <= 25	65.8	+36.5	2.24	65.0	+25.4	1.64
25 <= 50	55.0	+33.2	2.52	] 52.2	+20.7	1.66
50 <	62.5	+25.5	1.69			
C. PERCENT WHO MOVED TO CURRENT RESIDENCE 1960-1970						
<= 40	62.2	+36.3	2.40	] 67.4	+29.8	1.79
40 <= 50	63.3	+33.0	2.09			
50 <= 60	65.4	+35.1	2.16	67.3	+32.8	1.95
60 <	62.5	+31.4	2.01	53.5	+26.0	1.94
D. BIRTH RATE						
Below average	61.3	+32.5	2.13	66.5	+29.0	1.77
Above average	65.8	+34.1	2.08	63.4	+33.8	2.14
E. DEATH RATE						
Below average	64.5	+33.0	2.05	63.3	+32.4	2.05
Above average	62.3	+34.0	2.20	67.5	+28.3	1.72



Table 35  
OCCUPATIONAL STRUCTURE CHARACTERISTICS OF THE COUNTIES  
AND SURVIVABILITY INDICES (IN BLAST SHELTERS)

Characteristics	TR-82 High Risk Areas				Other Areas		
	Survivability Index	Difference Index*	Ratio Index*		Survivability Index	Difference Index*	Ratio Index*
A. PERCENT EMPLOYED IN MANUFACTURING							
Below average	63.5	+32.8	2.07		64.4	+29.0	1.82
Above average	64.2	+34.4	2.15		67.9	+31.5	1.86
B. PERCENT EMPLOYED IN WHOLESALE/RETAIL							
Below average	63.6	+34.0	2.15		66.1	+29.7	1.82
Above average	63.8	+33.0	2.07		65.3	+30.5	1.88
C. PERCENT EMPLOYED IN SERVICES							
Below average	64.2	+34.4	2.15		69.2	+31.5	1.84
Above average	63.2	+32.4	2.05		59.5	+27.4	1.85
D. PERCENT EMPLOYED IN EDUCATION							
Below average	64.0	+34.2	2.15		69.4	+31.3	1.82
Above average	63.2	+31.6	2.00		60.8	+28.1	1.86
E. PERCENT EMPLOYED IN CONSTRUCTION							
Below average	63.6	+33.0	2.08		66.9	+30.2	1.82
Above average	64.7	+36.5	2.29		63.6	+29.4	1.86
F. PERCENT POPULATION ON FARMS							
= 0	61.6	+33.2	2.17	]	57.2	+24.7	1.76
0 <= 1	66.7	+34.7	2.08				
1 <= 5	70.7	+31.8	1.82		68.8	+37.2	2.18
5 <= 15	71.5	+37.9	2.13	[	66.5	+29.1	1.78
					69.7	+29.7	1.74

Table 36

## SOCIOECONOMIC STATUS CHARACTERISTICS OF COUNTIES AND SURVIVABILITY INDICES (IN BLAST SHELTERS)

Characteristics	TR-82 Risk Areas			Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index*	Difference Index*	Ratio Index*
<b>A. PERCENT WITH HIGH SCHOOL EDUCATION OR MORE</b>						
<= 33.3						
33.3 <= 45	59.3	+33.9	2.33	66.8	+29.3	1.78
45 <= 55	66.2	+35.7	2.17	68.4	+36.6	2.15
55 <= 66.7	63.6	+31.8	2.00	68.8	+30.4	1.79
66.7 <	57.1	+27.9	1.96	67.6	+32.2	1.91
<b>B. PERCENT FAMILIES WITH FEMALE HEAD</b>						
<= 7.5	62.9	+32.5	2.07	67.7	+30.3	1.81
7.5 <= 10	64.5	+32.3	2.00	66.3	+31.3	1.89
10 <= 12.5	64.7	+37.7	2.40			
12.5 <= 15	65.8	+33.6	2.04	60.1	+23.4	1.64
15 <	57.8	+30.7	2.13			
<b>C. PERCENT FAMILIES BELOW POVERTY LINE</b>						
<= 5	58.4	+30.9	2.12	63.9	+22.7	1.55
5 <= 10	64.2	+33.6	2.10	65.2	+29.7	1.84
10 <= 15	67.0	+33.9	2.02	65.2	+33.2	1.98
15 <	64.2	+38.4	2.49	67.5	+30.0	1.80
<b>D. MEDIAN INCOME</b>						
<= \$ 8,000	70.3	+36.8	2.10	66.3	+28.2	1.74
\$ 8,000 <= \$10,000	64.9	+34.3	2.12	67.2	+32.4	1.93
\$10,000 <= \$12,000	63.8	+33.5	2.10	61.4	+26.4	1.80
\$12,000 <	57.2	+28.9	2.02	no cases in the sample		

Table 36 (Continued)

Characteristics	TR-82 Risk Areas			Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*
E. MEDIAN DOLLAR VALUE OF OWNER OCCUPIED HOUSING UNITS						
<= \$10 <sup>4</sup> ** ]	67.1	+33.4	2.01	73.0	+37.4	2.05
\$10 <sup>4</sup> <= \$10 <sup>4.2</sup>				65.9	+29.2	1.80
\$10 <sup>4.2</sup> <= \$10 <sup>4.4</sup>	64.2	+34.3	2.15	59.0	+24.4	1.70
\$10 <sup>4.4</sup> <	57.1	+30.7	2.16	no cases in the sample		
F. AVERAGE 1969 VALUE OF FARM						
Below average	67.2	+35.1	2.09	67.6	+30.2	1.81
Above average	61.7	+31.7	2.06	59.5	+29.7	2.00
G. AVERAGE DOLLAR VALUE PER ACRE OF FARM LAND						
Below average	66.9	+34.3	2.05	65.5	+29.9	1.84
Above average	57.0	+30.4	2.14	no cases in the sample		
H. PER CAPITA LOCAL GOVERNMENT EXPENDITURES						
<= \$150	70.1	+39.9	2.32	64.2	+29.4	1.84
\$150 <= \$200	67.4	+35.5	2.11	69.7	+30.8	1.79
\$200 <= \$250	66.2	+35.9	2.18	70.9	+31.7	1.81
\$250 <	59.4	+29.7	2.00	61.2	+28.8	1.89

- (a) In counties that are least urbanized.
- (b) And where there are many people living on farms.
- (c) Counties with higher negative net migration (loss of population of 10 percent or more due to migration).
- (d) In counties with few residents with high school or more formal education, and
- (e) In counties with more than 12.5 percent of households headed by women.
- (f) In counties with low local government per capita expenditures.

These then are areas where the survival payoff of fallout shelters is seen actually as being somewhat better than would be survivability for a blast sheltered population. The profile of these types of areas is best illustrated by counties like Lawrence, Arkansas; Gallatin, Illinois; Clairborne, Tennessee; or Clarendon, South Carolina.

- (4) The further survivability increases due to blast sheltering as contrasted with fallout shelters are, however, relatively small, of the order of a few additional percentages of estimates of potential survivors.

It seems rather unlikely that most people would be aware of what would amount to almost a quantum jump in required expenditures of money and effort to develop and implement a full-scale blast shelter program as compared with fallout sheltering. It may be difficult, therefore, to evaluate the extent to which the increased survivability payoff might seem worth such costs. Assuming, however, relative lack of knowledge of cost factors involved, it is possible to consider basic acceptability of a blast shelter program (the nature of which might easily change once better knowledge of associated costs were made clear) and the matter will be taken into account in a later section of the paper.

Of course, there exists no current plan on the part of the Federal Emergency Management Agency to opt for a blast shelter program for the population at large, even though efforts related to industrial preparedness, and continuity of basic essential economic activities even were our people relocated from high risk areas do necessitate the consideration of blast protection at least for "essential workers." More formal models of probable attacks, of course, indicate higher potential survival for a blast sheltered population than is implied in terms of national public perspectives.

Now before more explicit attention is paid to the data of Tables 32-36, a few important points need to be clarified. For one, it has already been stated that there exists no national program to construct blast shelters to protect our people (with the possible exception of designated "essential workers," a fragment of the population to be sure).

Second, if consideration to blast protection were to be plausible in the next few years, a somewhat unlikely circumstance, it does not seem probable that such a program would encompass areas thought to be, by the Department of Defense, "lower risk" areas. Thus one might postulate a future blast shelter program, or at least thinking through the costs and implications of such a program, that would be dedicated to high risk areas--with fallout protection efforts in lower risk areas. Alternatively, one might think of such activities in terms of time-scaled priorities: if the nation were to (ever) engage in a blast protection program, the initial phase investments would certainly have to be made in high risk areas (themselves most likely prioritized: high risk areas in the vicinity of important military targets and "other" high risk areas--a minimum type of prioritization). Lower risk areas, if at all, might enter into the national calculus of protection only "subsequently," a second/third or whatever wave effort.

Thus while Tables 32 through 36 give detailed data for both higher and lower risk areas, the interpretative emphasis herein lies on the TR-82 high risk areas: salient differences, such as exist, in the lower risk areas will not be analyzed beyond the presentation of the information in the respective Tables.

In this context it is therefore also somewhat less important that the survivability payoff based on fallout protection is, in some types of national areas, higher than the payoff from blast shelters: all such counties, as has been discussed above, are in the lower risk areas.

The following main conclusions can be reached on the basis of the data of Table 32 with reference to the TR-82 high risk areas:

- (1) The survivability likelihood index tends to be the lower the higher the density:
  - (a) In very high density areas (10,000 per square mile and more), the index is higher than it is in the high, but not very high, counties.

- (b) Though in the high density counties (5,000 to 10,000) the likelihood of survival is the lowest (53.2), this represents an increment by a factor of 2.70 (very high) in relation to survival in a "next week's war."
- (2) The higher the urbanization percentage, the lower the survivability index--a range from 56.2 (100 percent urban population) to 70.9 (25 percent or fewer in urbanized county area).
  - (a) The difference index is also the lower the higher the urbanization.
  - (b) The ratio index, however, suggests a good deal of homogeneity and it is above the doubling value in all "percent urban" areas.

The population composition data (Table 33) show no robust differences of any kind in these higher risk counties.

This is essentially also true about the data of Table 34. Here, counties with very high population growth (over 50 percent) yield a low survivability index (54.7), but it represents an increase in survival prospects over "next week's war" by a factor of 2.03.

Also, counties with high net immigration (50 percent or more) differ from other counties: the ratio index is quite low (1.69); in counties with high positive influx, as a net population gain, of people (25 to 50 percent) yield a low survivability likelihood index (55.0)--but the increase represents 33.2 percent (over "next week's war") and implies that 2.52 times as many people might survive under the postulated blast shelter conditions.

The tabulation in terms of occupational structure indices displays but one important regularity: the higher the percentage of people living on farms, the higher the survivability (under blast shelter circumstances).

Finally, some clear-cut conclusions can be reached on the basis of the data of Table 36 (on socioeconomic characteristics of the counties):

- (1) The lower the median household income, the higher the survivability--a range from 57.2 (with median income of over \$12,000) to 70.3 (with median income below \$8,000). But neither the difference indices, or even more specifically the ratio measures, display parallel variation. The difference index also declines with increasing median income but the range of the change lies between 28.9 and 36.8 percent only.

- (2) The lower the value of owner occupied dwelling units, the higher the survivability; the ratio indices, in turn, go the other way--the higher the value of owner occupied units, the greater the multiplier by which blast shelters enhance survival chances over parallel prospects under "next week's war" conditions.
- (3) The higher the per capita local government expenditures, the lower the survival likelihood index--a range from 59.4 (where more than \$250 per capita are being spent) to 70.1 (where the expenditures amount to \$150 or less). Essentially, the difference index shows a similar relationship: in the counties with lowest per capita expenditures, blast shelters increase survival by an index value of 39.9 (and a factor of 2.32). In counties with high per capita investments, the difference amounts to 29.7 (and the ratio index is 2.00, thus doubling of the "next week's war" survival rate estimates).

The main result, across the county characteristics, is surprise-free: socioeconomic factors are central to such differences in survival prospects as our people believe to exist. And, indeed, the basic direction of the results is the same as that applicable to the fallout shelter survival odds or, for that matter, to survival in a "next week's war" (with some variabilities): the lower the socioeconomic standing of the counties (by such measures as median income, per capita local government expenditures, value of owner occupied housing units), the higher the perceived survivability.

The difference indices, by contrast, are generally much more homogeneous. They vary between the low (and this is quite an exception) of 25.5 (in counties with very high immigration) to the high of 39.9 (in counties with very low per capita local government expenditures per annum).

The ratio measures are also quite heterogeneous: the high of 2.70 occurs in counties with high densities (5,000 to 10,000), and the low index value of 1.69 (which is also quite exceptional) occurs in counties with very high net immigration.

In all, then blast shelter protection has credible effectiveness when compared with survival chances in a "next week's war": for the most part, such programs, in public perception, more than double the low "next week's war" survival probabilities.

But, at the same time, blast shelters are not seen performing significantly better than would fallout shelters: the marginal effectiveness is, therefore, rather low.

There seems to be little doubt that lack of adequate technical information (not due to its unavailability but, one suspects, due to the low saliency of the issue and to the total absence of emphasis on possible blast shelter programs thus far) might well account for the low marginal increment in survivability attributed by our people to blast shelters as compared with fallout shelters (about which there was a good deal of publicity especially in the decades prior to the 1970s).

And, of course: with estimates survival chances around the 2/3 marker of the population, the nation is in no way expressing some sense of complacency--that is, all this still amounts to implied public estimates of over 1/3 fatalities in the event of nuclear war and there exists no evidence that our people would somehow feel that the damage limiting effects of blast shelters would be such, in terms of lives saved, as to make a nuclear war somehow less worrisome.

Only if one were to assume that some 33 percent fatalities would somehow prove "acceptable" to our people could the conclusion be drawn that programs involving blast shelter protection of the population would make people "complacent" about risks associated with nuclear war.

This is, indeed, a bit too far-fetched to contemplate.



## X. SURVIVABILITY: UPON RELOCATION

The respective item in the questionnaire referred to "evacuation or relocation." This, as has already been touched upon, was due to the fact that the concept of "relocation" is not a customary one in the public domain, while "evacuation" is. Only in the most recent period has there been significant public reference to "crisis relocation."

The item provided for the same basic responses as did the questions regarding survival in a postulated "next week's war," under "fallout sheltered" circumstances, or if people were in "blast shelters." Thus the indices of survival likelihood allow the same simple transformation which was referred to in Chapter VII above.

Table 37 gives the appropriate percentages on the basis of the overall sample responses, and it again shows the difference and ratio indices relative to the "next week's war" item.

Table 37

### SURVIVAL CHANCES UNDER RELOCATED CONDITIONS

	<u>Percent</u>	<u>Difference Index</u>	<u>Ratio Index</u>
Very good	7.5	+ 6.3	6.2
Fairly good	26.5	+15.2	2.3
About 50-50	41.8	+12.5	1.4
Fairly bad	9.8	-15.2	.4
Very bad	5.4	-24.8	.2
Don't know/no answer	9.1	NA*	NA*

\*Not applicable

If follows:

- (1) Relocation programs are seen to enhance survival chances over the prospects for survival under "next week's war" conditions.
- (2) The increased survival, however, is lower (by all indices) than it is for survivability likelihood given fallout protection: by implication, of course, it is even lower when compared with the nation's view regarding survival chances in blast shelters.

(3) Those who don't know (and an additional smattering of very few respondents who simply did not answer at all) amount to a similar percentage as that associated with the blast shelter item--and these percentages are substantially higher than those obtained in relation to fallout shelters or to "next week's war" survival. Hence: both blast shelters and relocation programs are significantly more uncertain as to their effectiveness (as seen by the public) than are fallout shelter programs, or, for that matter, the state of civil defense as it existed circa 1978 (postulated "next week's war").

The standard survivability indices, for higher and lower risk areas (and for the total sample) are displayed in Table 38.

Table 38  
SURVIVABILITY INDICES (UPON RELOCATION)

	<u>Survivability Index</u>	<u>Difference Index</u>	<u>Ratio Index</u>
Total sample	55.8	+24.3	1.77
In TR-82 high risk areas	55.7	+25.4	1.84
In other areas	55.9	+20.0	1.56

Thus in terms of the likelihood of survival index, there are, in effect, no differences at all. The difference index shows, as does the ratio measure, somewhat better prospects of survival given relocation in higher than in lower risk areas. Since it is, of course, higher risk areas that would be subject to crisis relocation, should the measure ever be invoked, the result is not counterintuitive at all.

At the same time, the crisis relocation program involves the possibility of evacuating high risk area population and not, naturally, the people in relatively (TR-82) safer areas. Thus while Tables 39 through 43 (set up identically as Tables 25 through 29 for "fallout shelter survival" and Tables 32 through 36 for "blast shelter survival") also include detailed results for residents in lower risk areas, the more concrete discussion which follows focusses once again only on the interviewees who live in the TR-82 high risk areas.

In the high risk areas, all survivability indices under the blast sheltering proposition are higher than they are in the postulated fallout protection posture. Thus a comparison of the "relocated posture" with

Table 39

## SELECTED GLOBAL CHARACTERISTICS OF COUNTIES AND SURVIVABILITY INDICES (IF RELOCATED)

Characteristics	In TR-82 Risk Areas			In Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*
A. POPULATION DENSITY						
<= 100	55.4	+19.7	1.55	56.1	+20.5	1.58
100 <= 1,000	57.9	+26.9	1.87	55.2	+18.5	1.50
1,000 <= 5,000	56.1	+26.2	1.88	no counties in lower risk		
5,000 <=10,000	47.0	+27.3	2.38	areas with densities		
10,000 <	51.8	+22.0	1.74	in excess of 1,000		
B. TOTAL FARM ACREAGE						
Below average	55.9	+27.3	1.95	56.8	+18.2	1.47
Above average	56.7	+24.3	1.75	55.9	+21.5	1.59
C. PERCENT LAND IN FARMING						
Below average	55.3	+27.2	1.97	55.8	+20.5	1.58
Above average	56.4	+21.5	1.62	55.4	+19.8	1.55
D. PERCENT OF PRE-1950 HOUSING STRUCTURES						
Below average	57.7	+26.3	1.84	50.2	+21.2	1.73
Above average	53.6	+24.4	1.84	58.7	+19.5	1.50

Table 39 (continued)

Characteristics	In TR-82 Risk Areas			In Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*
E. PERCENT OF POST-1960 HOUSING STRUCTURES						
Below average	54.8	+24.3	1.80	58.2	+20.5	1.78
Above average	57.3	+27.2	1.90	50.8	+19.1	1.60
F. PERCENT URBAN						
<= 25	51.1	+17.8	1.53	55.2	+18.9	1.52
25 <= 50				56.3	+20.0	1.55
50 <= 75	57.4	+24.2	1.73	57.9	+20.8	1.54
75 <= 100	57.5	+27.2	1.90	50.6	+23.1	1.84
100 <	49.4	+21.5	1.77	no cases in the sample		

Table 40

SELECTED POPULATION COMPOSITION CHARACTERISTICS OF  
COUNTIES AND SURVIVABILITY INDICES (IF RELOCATED)

Characteristics	TR-82 High Risk Areas			Other Areas			
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*	
A. PERCENT MINORITY RESIDENTS							
25 =<	51.6	+22.6	1.78	J	54.6	+21.2	1.63
15 <= 25	56.7	+27.4	1.94				
5 <= 15	57.2	+28.3	1.91		50.4	+18.4	1.58
5 >	55.4	+22.2	1.67		58.1	+20.1	1.53
B. PERCENT UNDER 5 YEARS OF AGE							
Below average	55.6	+25.7	1.86		57.6	+20.5	1.55
Above average	56.2	+24.3	1.76		52.4	+19.1	1.57
C. PERCENT 65 YEARS AND OLDER							
Below average	57.0	+26.5	1.87		52.0	+19.4	1.60
Above average	53.1	+23.2	1.78		58.7	+20.4	1.53
D. PERCENT OWNER OCCUPANCY OF DWELLING UNITS							
<= 25	51.1	+24.7	1.94	J	no counties in these categories		
25 <= 45	55.6	+26.8	1.93				
45 <= 55	54.8	+24.7	1.82	J	55.2	+19.7	1.55
55 <= 75	56.6	+25.5	1.82				
75 <	53.1	+24.6	1.86		59.9	+21.9	1.58

Table 41

SELECTED POPULATION DYNAMICS CHARACTERISTICS OF COUNTIES  
AND SURVIVABILITY INDICES (IF RELOCATED)

Characteristics	TR-82 Risk Areas			Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*
A. POPULATION GROWTH 1960-1970						
<= 0	53.1	+26.5	2.00	58.8	+19.4	1.49
0 <= 10	54.3	+22.5	1.71	55.7	+15.5	1.38
10 <= 25	57.9	+24.8	1.75	57.0	+26.1	1.84
25 <= 50	56.4	+27.8	1.97	J	+17.1	1.50
50 <	55.8	+28.9	2.07			
B. NET MIGRATION 1960-1970						
<= -10	50.5	+21.8	1.76	53.7	+24.8	1.86
-10 <= 0	58.0	+26.4	1.84	56.0	+22.6	1.68
0 <= 10	55.1	+21.5	1.64	59.7	+23.0	1.63
10 <= 25	59.1	+29.8	1.98	55.2	+15.6	1.39
25 <= 50	50.0	+28.2	2.29	J	+20.3	1.64
50 <	60.0	+23.0	1.62			
C. PERCENT WHO MOVED TO CURRENT RESIDENCE 1960-1970						
<= 40	51.8	+25.9	2.00	J	+19.3	1.51
40 <= 50	54.4	+24.1	1.80			
50 <= 60	56.9	+26.6	1.88	55.5	+21.0	1.61
60 <	56.8	+25.7	1.83	50.6	+23.1	1.84
D. BIRTH RATE						
Below average	55.4	+26.6	1.92	57.5	+20.0	1.53
Above average	56.0	+24.3	1.77	49.6	+20.0	1.68
E. DEATH RATE						
Below average	56.9	+25.4	1.81	53.1	+22.2	1.72
Above average	53.6	+25.3	1.89	57.8	+18.8	1.47

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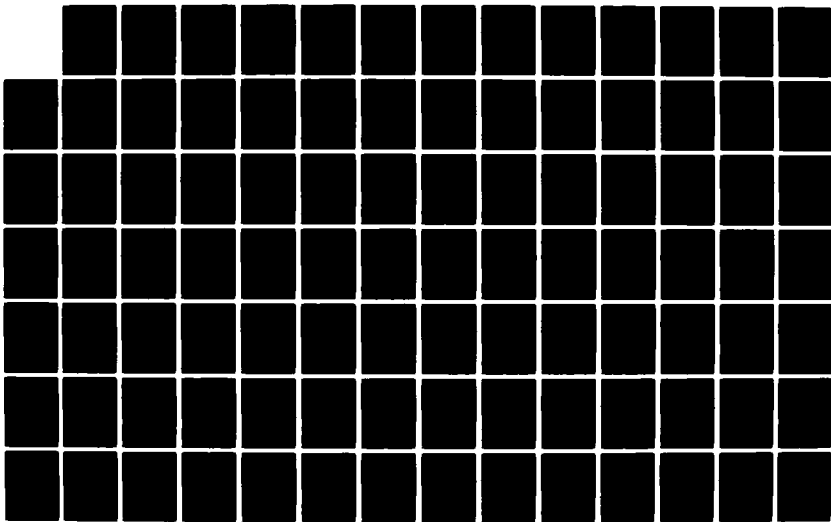
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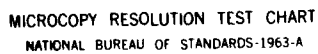
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Table 42

## OCCUPATIONAL STRUCTURE CHARACTERISTICS OF COUNTIES AND SURVIVABILITY INDICES (IF RELOCATED)

Characteristics	TR-82 High Risk Areas			Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*
A. PERCENT EMPLOYED IN MANUFACTURING						
Below average	56.8	+26.1	1.85	56.2	+20.4	1.59
Above average	54.0	+24.2	1.81	55.4	+19.0	1.52
B. PERCENT EMPLOYED IN WHOLESALE/RETAIL						
Below average	54.1	+24.5	1.83	55.5	+19.1	1.52
Above average	56.6	+25.8	1.84	56.7	+21.9	1.63
C. PERCENT EMPLOYED IN SERVICES						
Below average	55.5	+25.7	1.86	57.5	+19.8	1.52
Above average	55.9	+25.1	1.81	52.6	+20.5	1.64
D. PERCENT EMPLOYED IN EDUCATION						
Below average	54.8	+25.0	1.84	58.3	+20.2	1.53
Above average	57.9	+26.3	1.83	52.5	+19.8	1.60
E. PERCENT EMPLOYED IN CONSTRUCTION						
Below average	55.7	+25.1	1.82	55.6	+19.0	1.52
Above average	56.1	+27.9	1.99	56.4	+22.2	1.65
F. PERCENT POPULATION ON FARMS						
= 0	55.0	+26.6	1.94	53.8	+21.3	1.66
0 <= 1	58.2	+26.2	1.82			
1 <= 5	59.5	+20.6	1.53	55.2	+23.6	1.75
5 <= 15	51.4	+17.8	1.53	55.1	+22.7	1.70

Table 43  
SOCIOECONOMIC STATUS CHARACTERISTICS OF COUNTIES AND SURVIVABILITY INDICES (IF RELOCATED)

Characteristics	TR-82 Risk Areas			Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*
A. PERCENT WITH HIGH SCHOOL EDUCATION OR MORE						
<= 33.3						
33.3 <= 45	48.5	+23.1	1.91	52.6	+15.1	1.40
45 <= 55	56.9	+26.4	1.86	57.5	+25.7	1.81
55 <= 66.7	57.0	+25.2	1.79	57.6	+19.2	1.50
66.7 <	52.4	+23.2	1.79	55.5	+20.1	1.57
B. PERCENT FAMILIES WITH FEMALE HEAD						
<= 7.5						
7.5 <= 10	56.0	+25.6	1.84	55.4	+18.0	1.48
10 <= 12.5	55.7	+23.5	1.73	56.7	+21.7	1.62
12.5 <= 15	56.8	+29.8	2.10			
15 <	57.1	+24.9	1.77	52.8	+16.1	1.44
	51.7	+24.8	1.91			
C. PERCENT FAMILIES BELOW POVERTY LINE						
<= 5						
5 <= 10	54.0	+26.4	1.96	57.4	+10.2	1.25
10 <= 15	55.7	+25.1	1.82	56.8	+21.3	1.60
15 <	58.2	+25.1	1.76	54.1	+22.1	1.69
	52.9	+27.1	2.05	56.4	+18.9	1.50
D. MEDIAN INCOME						
<= \$ 8,000						
\$ 8,000 <= \$10,000	58.2	+24.7	1.74	55.9	+17.8	1.47
\$10,000 <= \$12,000	55.5	+24.9	1.81	57.6	+22.8	1.66
\$12,000 <	56.2	+25.9	1.85	52.0	+18.0	1.53
	53.1	+24.8	1.88	no cases in the sample		

Table 43 (Continued)

Characteristics	TR-82 Risk Areas			Other Areas		
	Survivability Index	Difference Index*	Ratio Index*	Survivability Index	Difference Index*	Ratio Index*
E. MEDIAN DOLLAR VALUE OF OWNER OCCUPIED HOUSING UNITS						
<= \$10 <sup>4</sup> **				57.1	+21.5	1.60
\$10 <sup>4</sup> <= \$10 <sup>4.2</sup>	56.4	+22.7	1.67	56.8	+20.1	1.55
\$10 <sup>4.2</sup> <= \$10 <sup>4.4</sup>	57.0	+26.7	1.91	53.2	+18.6	1.54
\$10 <sup>4.4</sup> <	50.7	+24.3	1.92	no cases in the sample		
F. AVERAGE 1969 VALUE OF FARM						
Below average	58.1	+26.0	1.81	56.4	+19.0	1.51
Above average	54.6	+24.6	1.82	52.9	+23.1	1.78
G. AVERAGE DOLLAR VALUE PER ACRE OF FARM LAND						
Below average	57.8	+25.2	1.77	55.5	+19.9	1.56
Above average	51.9	+25.3	1.95	no cases in the sample		
H. PER CAPITA LOCAL GOVERNMENT EXPENDITURES						
<= \$150	55.4	+25.2	1.83	53.9	+19.1	1.55
\$150 <= \$200	55.4	+23.5	1.74	57.9	+19.0	1.49
\$200 <= \$250	57.9	+27.6	1.91	58.2	+19.0	1.48
\$250 <	54.2	+24.5	1.82	55.0	+22.6	1.70

"fallout sheltered population" is of some value while the relocated population indices are all lower than they are under the "blast shelter" protection program proposition.

- (1) Basically, the fallout protection indices are higher than are the corresponding measures for the relocation option.
- (2) There are some exceptions; but in no instance are the differences in favor of relocation as contrasted with fallout protection major ones. The relocated posture indices are higher (or as otherwise specified, the same) for relocation than for fallout protection in the following types of counties:
  - (a) In counties with population densities that are around the medium (1,000 to 5,000 per square mile).
  - (b) In counties with below average land in farming.
  - (c) In counties with 5 to 15 percent minority group residents (though the ratio index is the same for "fallout" as it is for "relocation").
  - (d) In high population growth counties.
  - (e) In counties with fair amount of population gain due to migration (10 to 25 percent)--though the ratio index is essentially of the same value.
  - (f) In counties with low percentage of households below the poverty line.
  - (g) In counties with medium (25 to 45 percent) owner occupancy of dwelling units.

In Table 39, only a few of the differences are sufficiently robust to be singled out for emphasis:

- (1) In high density counties (5,000 to 10,000 per square mile), the survival likelihood index is a low 47.0; it has a value of 57.9 in low density areas (100 to 1,000 per square mile).
- (2) In counties that are quite urbanized, the indices are relatively higher (57.4 in areas with 50 to 75 percent urban residents, and 57.5 in areas with 75 to 100, but not low, percent urbanites). The most urbanized areas have a survival likelihood on relocation of 49.4.

- (3) Both the difference and ratio indices, indicative of survival increment compared with "next week's war" survival chances, are lowest in the very low density counties and in the least urbanized ones, and highest in the densely populated and highly urbanized areas.

None of the characteristics shown in Table 40 (population composition data) differentiate among the counties in survivability terms--a pattern holding for the likelihood, difference and ratio indices alike.

This is also true about the data of Table 41 and 42. In the former tabulation, there is a modest tendency for the survival likelihood to increase with increasing percentage of those who moved into their current residence during the decade; in Table 42, there is a slight tendency for the ratio index to be the lower the higher the percentage of population living on farms.

Nor are any pronounced differences shown in the data of Table 43: the ratio index tends to decrease the more people there are with high school or more formal education, the lower the median income, and the lower the value of owner occupied housing units: but these subtle results are, of course, due to the reverse relationship of these characteristics to survivability in a "next week's war" and, as might be expected, the difference indices are quite homogenous regardless of the socioeconomic factor considered.

The following summary statements are applicable to the spectrum of data presented in this chapter:

- (1) Survival prospects are improved over "next week's war" survival in all types of counties--thus regardless of the characteristics of counties from which the sampled respondents came.
- (2) But the relocation system is perceived as performing--in survival terms--not quite as well as either a fallout shelter system or blast shelter protection possibilities, a finding confirmed by the survival likelihood index as well as by the difference and ratio measures.
- (3) Crisis relocation then, in this late 1978 time frame, had some effectiveness credibility: if the more analytic models of the consequences of plausible attacks on the

United States in the early or mid-1980s suggest that as many as 80 percent of our people might live through an attack if high risk area populations were relocated to safer, or lower risk, areas, then public perceptions of survival under relocated conditions are characterized by a significant shortfall, hovering as they do around the 55 percent survivability marker.

- (4) In terms of county characteristics, the survival prospects indices upon relocation are quite homogeneous--much more so than are the indices for fallout or blast protection alternatives. Hence, the increased survival chances are seen basically quite alike regardless of the traits of the residential areas of the respondents.

Admittedly then, the survival payoff of crisis relocation is seen as poorer than the corresponding "returns" (in survivability terms) of fallout or, particularly, blast shelters. Is the survivability increase seen sufficient to warrant public acceptance of crisis relocation?

Data on desirability of crisis relocation and worthwhileness of crisis relocation planning, considered in a later section of this report, can help answer this particular question.

## XI. CONCLUSIONS

Whatever contribution measures of civil defense can make toward deterrence--thereby decreasing the likelihood of nuclear war--is, of course, all to the better. But in some deeper sense, the central criterion cannot but be the survival of our people. This is a desideratum in its own right, indeed. It is also accurate to say that such effects as civil defense measures might have on the deterrent posture of the nation are themselves dependent, or a function of, increased survival probabilities. That criteria having to do with "post war" recovery and reconstruction, too, are highly salient goes without saying--but they are also grounded, as it were, in the possibilities of, and prospects for, the nation's survival as a people.

In this section of the paper, then, public images regarding survival under various conditions were explored. It is relatively much less important to evaluate these public judgments as to their likely "accuracy": right or mistaken (which only an actuality would validate or invalidate), such perceptions are among the central aspects of credibility of any civil defense effort.

Are civil defense measures likely to "work"? It is clearly a critical question. Certainly, one would argue that such measures would "work" if they accomplished their strategic objective: to enhance deterrence by making survival in a nuclear war more probable, and to enhance survival chances should deterrence fail despite all national efforts at war prevention.

Consideration was given to public survival estimates under the conditions of a postulated "next week's war": the nation would have to do with whatever current level of preparedness augmented by the marginal increase in preparedness which an implied "one week's surge" might make possible.

These estimates of survivability in a "next week's" conflict were used as a data baseline against which to pit, or in which to anchor, survival likelihood on condition that the nation engages in a more systematic program of preparedness.

Consideration was given explicitly to three classes of programs: fallout shelters, blast shelters, and crisis relocation (which itself, were a crisis to escalate into a conflict, necessitates fallout shelters for relocatees as well as residents of the respective "host" areas).

- (1) All such emergency preparedness systems (of which the hub concerns the way of protecting our people against direct and/or indirect weapons effects) have, in the public view, some, if not very important, effectiveness in that survival chances tend to be, roughly speaking, about doubled.
- (2) The increased survivability perceptions are the greatest for blast shelter programs, and lowest for relocation efforts--though the differences between blast shelters, fallout shelters and relocation posture are, relatively speaking, rather small.
- (3) None of the baseline types of programs, however, lead to particularly optimistic estimates on the part of our people: the implied nonsurvival rates are of the order of 35 to 45 percent (though they are some 70 percent for the "next week's war" proposition).
- (4) Socioeconomic factors, with important contributions of factors bearing on population dynamics, turn out to be the relatively stronger determinants of differences in perceived survivability payoffs especially with regard to a fallout-sheltered and blast-sheltered population. The more well-to-do areas yield consistently lower survival estimates than do the poorer counties of the nation. The socioeconomic variables loom important in both TR-82 high risk and lower risk areas; population dynamics factors are particularly important as a contributor to differences in survival perceptions in lower risk areas: the prospects are seen better in declining and rather unchanging counties than in high growth and high mobility counties.
- (5) None of the county characteristics of the residents lead to robust differences when it comes to estimates of the



survival effectiveness of crisis relocation: such differences as exist are indicative of weak tendencies at the most.

- (6) Whether or not the perceived survivability payoffs make a compelling public case in favor of civil defense efforts can be determined only by considering the extent of public acceptance of, and preference for, various civil defense programs and their associated cost-tags.

This matter, as has been stated before, is taken up in later sections of this report (within the limitations of the extant data).

Now there exist some obvious and important policy problems. Three of them, interactive though they are, may be readily identified.

For one, programs to protect our people against primary effects of nuclear weapons ("blast shelters") yield analytically substantially higher survival estimates than do the public (perception based) estimates. Indeed, the simulated patterns of attacks-cum-blast protection may go as high as 95 percent survivability; and none would fall much below 80 percent. The public then appears to underestimate the survival potential of blast shelter systems.

Second, crisis relocation programs yield analytic survival rates of up to 80 percent and generally not below some 67 percent (2/3 of the population). Again: the public seems to underestimate the potential effectiveness of programs to relocate people, under deteriorating international crisis conditions (and especially should the Soviets begin evacuating their target areas), from high risk to lower risk or safer areas.

Three, crisis relocation programs are seen as lower in survival effectiveness than are fallout shelter programs. In the environment of the 1980s, given the massive strategic build-up in the Soviet Union throughout the 1970s, there is little doubt that crisis relocation, if carried out, would actually yield better survivability prospects than would fallout sheltering--more specifically, in the high risk areas.

Since there exists no FEMA plan, at this time, to emphasize a program of blast shelters throughout the nation (or in high risk areas at least)--save for the possibility of providing such protection for "essential workers" to keep the core of the economy going even during a relocated

posture--the "blast shelter" policy problem is largely irrelevant at this time. But this kind of an "answer" stands to oversimplify the problem: some further consideration is called for and that matter will be taken up shortly in its appropriate context.

When it comes to crisis relocation as a policy problem (thus far limited to these survivability matters), the issue becomes quite a bit more complicated even at the outset.

There are, it seems, some major public policy options and they all have to do with the style of, and nature of, public information provisions.

- (1) FEMA could emphasize, in the form of a "selling" campaign almost, the improved survival prospects under relocated conditions. This might increase public estimates of survivability upon relocation. It also implies, and quite directly so, that "fallout shelters" are less effective (as objectively they are--at least in high risk areas) than would be crisis relocation.
- (2) FEMA could stress both crisis relocation survival payoffs and fallout shelter survival returns--on the premise that fallout shelters (in-place systems in high risk areas) may be the best that can be done if crisis relocation is not implemented: because of lack of strategic warning or because of Presidential decision (or lack of decision, as some might put it) to act to relocate our people on a timely basis even were there strategic warning.
- (3) FEMA could stress the importance of increased survivability if our high risk population were evacuated, while also making it clear (either explicitly or by maintaining "silence" regarding the matter) that fallout protection is at best second best and would amount to a fallback provisions under unlikely, or very unlikely, conditions of an "out of the blue" attack, or Presidential failure to exercise the relocation option (either due to lateness of information regarding attack probabilities, or due to lateness of decision to implement the option, or due to unwillingness to exercise the option for fear that it might actually increase attack probabilities).

- (4) Finally, FEMA could leave "things as they are"--and thus not attempt to enhance the credible effectiveness of either crisis relocation or fallout shelters or both. This, of course, amounts to FEMA's acceptance of the current (and whatever it may be by 1982 or 1983) pattern of survivability perceptions whereby our people consider fallout shelters to be "better performers" than crisis relocation.

In all these options, each with its own difficulties and (some) advantages, the underlying policy problem has to do with the relative emphasis which ought to be placed on FEMA's direct contributions to such informational/educational efforts, as contrasted with an emphasis on the states, counties or localities. Again: no provisions are made here to "recommend" one alternative over another--since a different and additional analytic effort would be required.

Some important policy issues also arise both in conjunction with the main alternative protection programs and across such programmatic thrusts. Only some of the major issues are highlighted here not to the exclusion of other crucial considerations.

For one, some estimation of national survival rates under various program options, and indeed suboptions of the main plausible efforts (blast shelters, fallout shelters, crisis relocation--with fallout shelters available should the crisis ever get "out of hand"), is altogether necessary to estimate required ranges of expenditures, the technical manpower needs (such as "shelter managers" and so on), as well as to provide data on the basis of which the program can be justified and explained both to the Congress and to our people (having been, first of all, justified and explained within the Executive branch of our Government and adopted and recommended to the Congress for appropriate action). Such estimates of necessity are based on this or that analytic model (of attack and national civil defense posture at the time of attack). Inherently, therefore, the results themselves are scenario-dependent and actually cannot be otherwise.

The resulting numbers (of survivors or of survivors "added") are then easily challengeable by challenging the model assumptions, almost any one of them, or the (mathematical) rules by which the model data lead to the outcome. The numbers, no matter what, are therefore uncertain and not over negligible ranges of possible variability.

The policy dilemma then is of the following kind: how to use clearly uncertain data in what amounts to "point estimation" of manpower and budgetary requirements while, at the same time, making it clear that such data are, and will always remain, quite uncertain so that the projected survivability payoff may have quite a robust range of variation under actual conditions of a nuclear attack.

Here, public "estimates" of survivability have been used to show the nation's perspectives on the effectiveness credibility of major alternative programs. Such data, too, are plausibly utilizable in the way of justification or explanation for alternative civil defense efforts. But then: "should" such data be used as a dimension of program justification at all? "Should" such data be used in preference over the scenario-dependent analytic models? "Should" such data be used in conjunction with model-generated survivability estimates and how, then--in the absense of a known methodology for so doing, at least to this date--might the public perspective data be interpreted and combined with scenario-related outcomes?

Perhaps central to the policy domain is, furthermore, the following kind of an issue: how to strike a balance, if that were at all possible, between a program that can provide maximum feasible protection for our people (for instance, a blast shelter program for residents in high risk areas) but at a relatively high cost (higher by significant factor over any civil defense budget in recent history) and a program which provides "maximum feasible protection" given anticipations of a specific and narrow range of budgetary flexibilities, far below the "high cost" for the "really best" program? In other words, the strategic policy issue for FEMA in this regard has to do with the irreconcilable dilemma of proposing programs (the best that are feasible) and costing them, or of devising programs that fit budgetary packages--or some balance between the two more extreme options.

For the Federal Government as a whole (well beyond the dilemma such considerations chronically must pose for an agency like FEMA), the issue is poignant and equally difficult to resolve: who (which agency, organization, Department) really makes the final recommendations leading to Presidential decisions about national survival policy? How should such recommendations be made and by whom? Now if it turns out to be the choice

of the Government to help protect critical workers by the construction of blast shelters (since they would be taking undue risks in a crisis environment in which others' will have been relocated--given the crisis relocation option), many significant policy questions arise:

Some people are unlikely to relocate no matter what. Refer to them, thereafter, as "stayputs." Should stayputs be provided with the same level of protection if others, critical workers, would remain in, or commute, to relocated areas? If not, what level of protection and of what kind is merited for the stayputs--who, after all, will have had an opportunity to relocate but choose not to? Is there "any" obligation on the part of the Federal Government, the states, counties and localities to protect them--beyond urging them to leave? And if the "stayputs" were to be protected as well as the critical workers (blast shelter possibility), what might be the effects on willingness to relocate on the part of the rest of the population: would this in itself pressure the Government toward a full scale, and expensive, blast shelter program? If stayputs were protected at least by "best available fallout shelter" (but not blast shelter), what might be the effect on the stayput rates--since such a program also implies relative adequacy of fallout shelters even in high risk areas.

In any case, yet another dilemma: if our people become convinced that crisis relocation is the best available option (at feasible costs) and if this should induce lessened appreciation of effectiveness of protection in (best available) fallout shelters, then what is implied for the public in the way of a fallback system: that is, should crisis relocation not take place (for whatever reasons). Would the absence of a reasonably adequate fallback system (against the low likelihood, but nonetheless real, possibility of a "sudden attack" or against the national choice not to implement crisis relocation in a crisis) have negative effects on civil defense credibility in toto? By contrast: if the fallback system (such as best available fallout shelters in high risk areas) is seen as equally, or almost as, adequate as the crisis relocation option, what might be the effects on the stayput rates?

These are no easy matters to resolve although many hypotheses are implied in the formulation of the above questions.

The policy dilemma, of course, is roughly of the following manner: how can a credible fallback system be developed and maintained while also developing and sustaining a credible primary protection system? How can both of these (necessary) programmatic thrusts be balanced in face of budgets which tend to be inherently inadequate for either alternative alone, not to speak of both? But then: a fallback alternative need not rely on "best available" fallout shelter only; it could, it seems, be considered in the context of the possibilities associated with "expedient shelter" (which Oak Ridge studies have shown to provide protection of, perhaps, up to 55 PSI--and thus rather significant blast protection--along with very adequate PF). There are, however, no data on public views of a possible last minute "expedient shelter" option. In the 1978 national study, the choice of not including any items pertaining to expedient shelter was a deliberate one: the concept itself was, and quite probably remains, all but altogether unknown to the public; and secondly, the very idea that the Federal Government might, as a formal program of protecting our people against the hazards of nuclear war, recommend a pick and shovel activity of individual Americans and individual American families could well have undue negative effects on the credibility as well as acceptance of civil defense at large. That under crisis conditions such improvisations may prove necessary; that they might be feasible; that they might be accepted and carried out by significant segments of the public does not alter the normalcy condition difficulties associated with such concepts. The same qualifications hold about "expedient shelter" that could possibly be required, or needed, in some host areas even upon relocation.

The policy dilemma is of the following kind: How might the idea of "expedient shelter" be meaningfully integrated into the conceptualizations, and doctrines, that go with fallback systems of protection? With crisis relocation? When and under what circumstances "should" FEMA, if ever, offer "expedient shelter" as a type of program--rather than merely and only the last resort under the very worst circumstances?

The policy issues identified here, along with some of the policy problems previously specified, help to represent the spectrum of difficulties which FEMA faces, and perhaps must face, in relationship to the central matter of national survivability in the event of a nuclear attack. The key programs (blast shelters, fallout shelters, crisis relocation) all display

some, but not excessive, effectiveness credibility in the nation's body politic: all would save significant additional lives (at least over those that people believe might be saved even in a "next week's war"). But a systemic policy view, perhaps, is required since the alternatives interact with each other in subtle, but critical, ways (as they interact with the growing Soviet strategic might and, of course, the relative Soviet/American strategic and defense capabilities).

At this time, when crisis relocation thinking represents the dominant mode of FEMA program conceptualization at least as far as primary protection of our people is concerned, the fact that crisis relocation is viewed as the least credible measure (in terms of survivability) cannot be readily disregarded. Nor should it be forgotten, however, that crisis relocation is seen as effective to some extent--enhancing, as our people surmise, survivability by about a factor of 1.77. Given our 225 million people or thereabouts, this does amount to some 55 million "survivors added"--clearly not an inconsequential benefit.

PART C

COSTS OF CIVIL DEFENSE



## XII. INTRODUCTION

Here, two questionnaire items are of particular relevance. One asked the respondents about their guesstimates regarding the annual moneys being spent on civil defense. Another probed into the amount of investment that "ought to be made" for civil defense.

"I would like to ask you a few questions about how much money you think we, as a country, are spending on a few programs. The card shows the amount in dollars and cents to indicate what you think we are spending each year per each man, woman and child. It also shows the approximate total amount for one year to give you an idea of how much the dollars and cents come to when you add them up for our whole population.

Using this card, how much do you believe we spent last year on civil defense programs?"  
(Question 41A, 1978 Instrument)

The referenced card entries are shown in Table 44 below: for simplification purposes, a population of 200 million was taken as the bench mark to obtain the "dollar and cent" values.

Table 44

### INTERVIEWER CARD USED IN ASKING CIVIL DEFENSE COST QUESTIONS

For each man,  
woman and child  
per year

\$ .0  
\$ .05  
\$ .10  
\$ .25  
\$ .50  
\$ 1.00  
\$ 2.00  
\$ 5.00  
\$ 10.00  
\$ 25.00  
\$ 50.00

Approximate  
total per year

\$ 0  
\$ 10 million  
\$ 20 million  
\$ 50 million  
\$ 100 million  
\$ 200 million  
\$ 400 million  
\$ 1 billion  
\$ 2 billion  
\$ 5 billion  
\$ 10 billion

Subsequently, the respondents were asked:

"Now, using the same card (see Table 44, above, author's note), how much do you think we ought to spend every year on civil defense programs?"  
(Question 41D, 1978 Instrument)

Not insignificant numbers of respondents have answers which did not fit the preestablished (Table 44) categories. The data were acquired by the interviewers as respondents reported, and thereafter also coded in all relevant dollar categories (and thus not only those explicit on the card itself).

The current expenditure data then address questions of the following kind: Do our people think that the nation has been spending more on civil defense measures than was actually being spent? Do they think that the United States investments in civil defense have about actually the same as people estimated them to have been? Does the public think that less has been spent on civil defense than actually has been?

The "ought to" expenditure responses, of course, lead to yet other questions: Do people say that more "ought to be spent" than they believe was being spent? And how, in turn, does this relate to the actual pattern of expenditures? Do people think that the amounts that "ought to be spent" are about the same as what was being spent? And how does this, again, relate to actual expenditures? Or else, do people express themselves to claim that the nation "ought to" be spending less than they believed was being spent? And how does this relate to actual expenditures?

In Part B above, survivability indices were considered. How do perceptions of current civil defense expenditures relate to survival prospects? How do investments in civil defense that the nation "ought to" make relate to survivabilities?

Questions like these seem all-important: insofar as they are so, they need to be addressed more directly.

Now a whole roster of issues has to do with foregone opportunities: funding, at whatever level, of civil defense efforts always means that some other activities may not be funded, or funded less.

The data in this regard are not adequate at least in terms of a genuine assessment of opportunities foregone in the socioeconomic sense. But the 1978 instrument did include two additional "current expenditures" and "ought to" expenditures questions: about foreign aid, and about war on poverty programs.

Details of the results pertaining to such potentially competing alternatives will not be pursued: suffice it to say that our people had thought that expenditures on poverty programs were high but approximately appropriate (comparing current and "ought to spend" values). They also thought that expenditures on foreign aid programs were rather high: but "ought to be" significantly lower.

This in itself does not provide sufficient evidence as to what activities and programs might be reasonably foregone for whatever level of civil defense funding. But it does yield a basic clue: our people did differentiate among alternative programs both with respect to the then-current perceived levels of spending and in terms of desirable levels of investment.

The cost data pertaining to civil defense programs are not sensitive to major program options: questions about spending on blast shelters or on fallout shelters or on crisis relocation or on whatever realistic mixes were not asked.

Hence, the findings as they have to do with both current and desirable expenditures deal with civil defense in a more generic sense--whatever the specific program(s) may be.

With caveats such as these (and disregarding the possible level of public information/ignorance regarding costs of various programs, including those of civil defense), the mainstream results can be presented and interpreted. This is, of course, the central objective of this PART of the report.

### XIII. CIVIL DEFENSE: CURRENT EXPENDITURES

The civil defense appropriations in FY '78 and FY '79 were in the above \$90 million range. It is not too unreasonable to simplify such numbers and assume that the nation was spending approximately \$100 million in Federal funds on all civil defense activities around the time of the late 1978 study.

Beyond the obvious limitations of cost-related questions (which have been mentioned in Chapter XII above already), it is important to point to yet other problems with any instrument which involves items of this kind.

It might well be expected that many people would have no idea what the nation may have been spending on this or that activity. Some may then use a convenient category in terms of which to react to the question, but without any genuine insight.

Others may well admit that they "don't know." Indeed, 25.5 percent of the respondents did not respond to the "current spending" question: that civil defense was somehow not singled out for "special treatment" by the respondents can be surmised from the fact that the "don't knows" to the foreign aid expenditures question amounted to 22.7 percent, and in regard to the anti-poverty program question, 24.5 percent failed to claim some knowledge.

Since very large numbers--millions or even billions of dollars--are quite difficult to comprehend to most people who deal in hundreds, or perhaps at most thousands of dollars, the item (as shown in Table 44 above) included an approximation of what the aggregate amounts come to in terms of annual expenditures per person.

This may well be of some help but possibly not enough so. An amount of the order of \$100 million, as an example, may seem quite large (in absolute terms--that is, in the absence of its relative magnitude to other Government expenditures), not to speak of such amounts as \$1 billion. By contrast, \$0.50 per capita per year looms like a very small number--though with some 200 million people it does translate into a cumulative total of \$100 million. For that matter, \$5 per capita does not seem prohibitive in any sense with a typical automobile insurance policy running perhaps 30 to 80 times as much per year. But \$5 per person comes to \$1 billion annually for the country as a whole.

There is no way of knowing which respondents may have oriented their answers to the aggregate sums (in their million/billion dollar framework) and which ones may have reacted with regard to the "dollars and cents" aspect of the item.

The resulting numeric values cannot thus be taken on their face value (without much more probing which the time limit on each interview would not have made possible). At the same time, the numbers cannot be disregarded either: the "numbers" are real whether they are driven by difficulties connected with large numbers per se or by difficulties to recognize how small values rapidly aggregate to very large numbers for a sufficiently large populace or whether, as in many instances also must have been the case, they reflect a good comprehension of the associated "numbers game."

The data of Table 45 represent a simplified (categorized) percentage distribution of the responses. It shows that rather many respondents, 37.4 percent in all, thought that the nation was spending less than \$100 million per year on civil defense efforts. But also, 16.7 percent estimated the expenditures to lie in the \$1 billion and higher range, with another 7.3 percent whose responses fell into the \$200 to \$1 billion range (with by far most of these answers indicating investments of \$400 million per year).

Table 45

PUBLIC ESTIMATES OF CURRENT CIVIL  
DEFENSE EXPENDITURES (PER ANNUM)

	<u>Percent</u>
Nothing	1.5
\$ 0 < \$50 million	27.8
\$50 =< \$100 million	8.1
\$100 million =< \$200 million	13.5
\$200 million =< \$1 billion	7.3
\$1 billion =< \$5 billion	10.0
\$5 billion ≤	6.7
Don't know/no answer	25.5

In terms of averages, as shown in Table 46 below, this comes to an estimate of \$1 billion per year; there is no difference, in this regard, between TR-82 high risk and lower risk areas.

Table 46  
PERCEPTIONS OF CIVIL DEFENSE EXPENDITURES  
(IN MILLION OF DOLLARS)

	<u>Dollars Per Year</u>
Total sample	1,003*
In TR-82 high risk areas	1,003*
In other areas	1,000

\*Effect of rounding

On balance then, and assuming an approximate \$100 million actual investment in civil defense in that period, our people are saying that the expenditures are about 10 times what they "actually" were.

Even with all the admitted weakness of such estimates, the data clearly reveal a robust overestimate of then-current civil defense expenditures even if one were unwilling to hold on to the factor of 10 as being quite representative of actual public thinking.

The estimates range from \$202 million (in counties with many living on farms in the high risk counties) to \$1,434 million (in counties with lower owner occupancy of housing units). In the lower risk areas, the guesstimates of expenditures range from the low of \$555 million (in counties with net outmigration of up to 10 percent during the decade of the 1960s) to \$1,471 million (with net positive influx of people of the order of 10 to 25 percent over the decade).

Other differences, such as they are, tend to be much smaller.

In high risk areas, the higher the population density, the higher the estimate of current civil defense spending: the value goes from \$595 million in lowest density areas to the high of \$1,207 million in the highest density counties (with 10,000 or more residents per square mile).

Negative population change during the decade yields an estimate of \$1,334 million, while high population growth (50 percent or more) results in a guess about current civil defense spending of only \$680 million.

Basically, the higher the percentage of female headed households, the higher the expenditures estimate: where there are fewer than 7.5 percent of such family units, the estimates comes to \$650 million; it high value is \$1,384 million with 12.5 to 15.0 percent such households. (and it is \$1,190 million in households with more than 15 percent of female headed households).

The lower the dollar value of owner occupied dwelling, the higher the estimate tends to be--but the range goes only from \$917 million to \$1,109 million; similarly, lower per capita government expenditures yield lower spending evaluations than do higher local government per person investments. And finally, the lower the percentage of residents living on farms, the higher the estimate--the low value (of \$202 million only) having been already cited (in counties with more than 5 percent farmer population) as the low end of the whole continuum of civil defense expenditure estimates.

In the lower risk areas, beyond the "net migration" difference which actually establishes the range of variation of the expenditures index, few differences are sharp ones: there is, for instance, a tendency in higher growth counties to produce higher investment estimates (\$1,232 million in counties of medium, 10 to 25 percent, growth, and \$1,104 million in counties with growth in excess of 25 percent), while lower estimates come from residents of declining (\$851 million) or only modestly growing (\$719 million) areas.

In counties with some 33 to 45 percent of high school or more educated residents, the low value of \$736 is obtained, whereas in counties with 55 percent or more of the more educated, the estimate becomes \$1,272 million. But, at the same time, in counties with fewer than some 33 percent of high school graduates, the estimate is one of \$1,016 million.

Finally, in counties with about medium percentage of the population below the poverty line, the estimate is of the order of \$622 million; but it is \$1,213 million in areas with fewer than 10 percent below the poverty marker.

The main conclusions which are applicable to the current expenditure data are of the following kind:

- (1) Regardless of the type of area in which the respondents reside, the estimates of current civil defense expenditures

exceed "actual" expenditure by a factor of 2 to over 14-- with the central pattern lying between a factor of about 8 and 12.

- (2) In TR-82 high risk areas, higher estimates tend to come from counties with high population densities and few people living on farms; lower estimates, in turn, come from counties with very low densities and many people on farms.
- (3) In the lower risk areas, population dynamics and socio-economic well-being factors lead to such differentiation as exists: higher expenditure estimates characterize counties of higher population growth and high mobility (both in terms of immigration and residential change) and somewhat higher in affluence; lower expenditure estimates come from stable, or more declining, areas with relatively few more educated residents and medium percentages of people whose earnings fell below the poverty line.

The key pattern of current expenditure levels is illustrated by counties identified in Table 47 below.

Table 47

TYPICALLY HIGHER AND LOWER CIVIL DEFENSE  
INVESTMENT ESTIMATES (CURRENT COSTS)

<u>Higher estimates</u>	<u>Lower estimates</u>
Washington, D.C.	Morgan, Colorado
Fulton, Georgia	Ogle, Illinois
Orleans, Louisiana	St. Clair, Missouri
Essex, New Jersey	Johnson, Missouri
Baltimore City, Maryland	Madison, New York
San Francisco, California	Auglaize, Ohio
Queens, New York	Monroe, Michigan

Of course, central to the findings is the observation that even the "lower" expenditure estimates are substantially higher than the then-current (1978) actual civil defense funding levels.



#### XIV: CIVIL DEFENSE: DESIRED EXPENDITURES

Here, consider what the respondents had to say in answering how much--in aggregate and in dollars and cents per person--the nation "ought to" be spending on civil defense programs.

To repeat: the absolute numbers are, in an important sense, less important than are their comparisons with the "current" expenditure guesses.

Also, the data do not, in their present form (due to the constraints on the overall length of the instrument and the dominant need for other than cost-related information), deal with opportunity costs in any manner.

Finally, the data do not in themselves shed light on the "willingness to pay" factor--that is, not to have to "reallocate" extant funds (thus losing other "opportunities" for investment in national services) but to increase revenues, by whatever appropriate taxation mechanism, so as to meet the perceived need for higher civil defense spending.

If 25.5 percent of the sampled respondents did not venture to guess the current expenditure levels, or were simply unwilling to do so, some 24.6 percent similarly declined to say how much the nation "ought" to be spending. Yet, clearly, the non-responses do not amount to saying that "nothing" should be spent: the opportunity to select "no money" as the appropriate answer was provided and only 1.9 percent of the respondents availed themselves to this option.

Table 48 shows the (categorized) percentage distribution in terms of dollar aggregates, and the relation to the comparable percentage distribution regarding "current expenditures" which was shown in Table 45 above (Chapter XIII).

The dominant shift one indicates increased percentages in the higher investment categories: for example, 28.1 percent of all respondents (with the full sample, including those who did not answer the expenditure items, as percentage base) say that the nation ought to be spending \$1 billion or more on civil defense program annually. This represents an increase in these particular cost brackets of 11.4 percent over the percentage of those who thought that the country was already funding civil defense at these high levels.

Table 48  
DESIRED LEVELS OF CIVIL DEFENSE  
EXPENDITURES (PERCENTAGES)

	<u>Percent</u>	<u>Percent Difference*</u>
Nothing	1.9	+ 0.4
\$ 0 < \$50 million	10.1	-17.7
\$50 =< \$100 million	8.3	+ 0.2
\$100 =< \$200 million	18.1	+ 4.6
\$200 =< \$1 billion	9.0	+ 1.7
\$1 =< \$5 billion	16.1	+ 6.1
\$5 billion ≤	12.0	+ 5.3
Don't know/no answer	24.6	- 0.9

\*Difference between the percentage tabulated  
here and the corresponding percentage of  
Table 45 (on "current" expenditures).

There is a slight increase, from 1.5 to 1.9 percent, of those who say that "nothing" should be spent (as compared with those who say that the country has been spending "nothing," or essentially nothing). Overall, in the less than 100 million pattern (as desired expenditure), there are 20.3 percent of all respondents--a general drop of 17.1 percent when compared with the "current" expenditure percentages at these cost levels.

Table 49 shows the summary results in average dollar amounts--and it also provides a direct comparison with Table 47 in which parallel information on "current" expenditures was given.

Table 49  
DESIRED LEVELS OF CIVIL DEFENSE EXPENDITURES  
(IN MILLION OF DOLLARS)

	<u>Dollars Per Year</u>	<u>Difference Index</u>	<u>Ratio Index</u>
Total sample	1,618	+615	1.61
In TR-82 risk areas	1,620	+617	1.62
In other areas	1,612	+612	1.62

If "current" expenditures exceed "actual" expenses around the end of 1978 by a factor of 10, the "desired" expenditures are greater than "actual" ones by a factor of 16--and thus about 1.6 times what the already high perceived "current" expenditures appeared to be.

Furthermore, the aggregate result is just about the same for higher risk and lower risk areas. What happens when more detailed characteristics of the counties are taken into account? Tables 50 through 54 contain the data: the tabulation gives the desired expenditure level in millions of dollars, the difference between this desired level and the perceived then-current investments, and the ratio index between the two measures.

The following major conclusions can be drawn from a more detailed inspection of the tabulated results:

- (1) Both in higher and lower risk areas, regardless of more detailed county characteristics, the "desired" level of expenditure exceeds the perceived "current" expenditure level--with one sole exception: in counties with relatively few owner occupied housing units, the desired civil defense spending falls below the perceived current one. Yet, in these counties (basically illustrated by counties which as those under "high expenditures" in Table 47 of Chapter XIII above) the "current" expenses were seen as quite high--in excess of 1.4 billion dollars (and thus higher by a factor of 1.4 than were the average "current" expenditure estimates for all high risk counties).
- (2) This "shift" toward a lower level of funding--from 1.4 billion dollars to about 800 million per year--represents a (mistaken) belief that the nation has been spending quite a lot on civil defense; yet, the "drop" to 800 million as the desired level of funding still represents expenditures higher by a factor of 8 than the actual budgets around the end of 1978!
- (3) In several types of areas, the desired level of spending more than doubles the high current spending level estimates:

Table 50

## SELECTED GLOBAL CHARACTERISTICS OF COUNTIES AND DESIRED CIVIL DEFENSE EXPENDITURES

Characteristics	In TR-82 Risk Areas			In Other Areas		
	Desired Expenditures (000,000)	Difference Index	Ratio Index	Desired Expenditures (000,000)	Difference Index	Ratio Index
A. POPULATION DENSITY						
<= 100	1,394	+799	2.34	1,766	+751	1.74
100 <= 1,000	1,650	+677	1.70	1,130	+172	1.18
1,000 <= 5,000	1,613	+578	1.55	no counties in lower risk		
5,000 <=10,000	1,679	+609	1.57	areas in densities in		
10,000 <	1,651	+444	1.37	excess of 1,000		
B. TOTAL FARM ACREAGE.						
Below average	1,658	+571	1.52	1,064	+ 83	1.08
Above average	1,560	+640	1.70	1,968	+955	1.94
C. PERCENT LAND IN FARMING						
Below average	1,685	+642	1.62	1,457	+270	1.23
Above average	1,448	+600	1.71	1,670	+742	1.80
D. PERCENT OF PRE-1950 HOUSING STRUCTURES						
Below average	1,648	+603	1.58	1,540	+523	1.51
Above average	1,588	+631	1.66	1,654	+664	1.67

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Table 50 (continued)

Characteristics	In TR-82 Risk Areas			In Other Areas		
	Desired Expenditures (000,000)	Difference Index	Ratio Index	Desired Expenditures (000,000)	Difference Index	Ratio Index
E. PERCENT OF POST 1960 HOUSING STRUCTURES						
Below average	1,638	+616	1.60	1,623	+732	1.82
Above average	1,593	+619	1.64	1,591	+389	1.32
F. PERCENT URBAN						
<= 25	1,988	+885	1.80	1,691	+544	1.47
25 <= 50				1,925	+808	1.72
50 <= 75	1,380	+427	1.45	1,331	+650	1.95
75 <= 100	1,619	+659	1.69	1,915	+813	1.74
100 <	1,590	+376	1.31	no cases in the sample		

Table 51

SELECTED POPULATION COMPOSITION CHARACTERISTICS  
OF COUNTIES AND DESIRED CIVIL DEFENSE EXPENDITURES

Characteristics	In TR-82 Risk Areas			In Other Areas		
	Desired Expenditures (000,000)	Difference Index	Ratio Index	Desired Expenditures (000,000)	Difference Index	Ratio Index
A. PERCENT MINORITY RESIDENTS						
25 =<	1,709	+564	1.49	]	+130	1.11
15 <= 25	1,661	+534	1.47			
5 <= 15	1,546	+699	1.82			
5 >	1,640	+601	1.58			
B. PERCENT UNDER 5 YEARS OF AGE						
Below average	1,662	+635	1.62		+595	1.56
Above average	1,471	+541	1.58		+641	1.71
C. PERCENT 65 YEARS AND OLDER						
Below average	1,663	+618	1.59		+265	1.25
Above average	1,529	+614	1.67		+868	1.89
D. PERCENT OWNER OCCUPANCY OF DWELLING UNITS						
<= 25	1,721	+750	1.77	]	no cases in the sample	
25 <= 45	795	-639	.55			
45 <= 55	1,919	+702	1.58	]	+640	1.62
55 <= 75	1,602	+701	1.78			
75 <	1,540	+431	1.39		+434	1.54

Table 52

## SELECTED POPULATION DYNAMICS CHARACTERISTICS OF COUNTIES AND DESIRED CIVIL DEFENSE EXPENDITURES

Characteristics	In TR-82 Risk Areas			In Other Areas		
	Desired Expenditures (000,000)	Difference Index	Ratio Index	Desired Expenditures (000,000)	Difference Index	Ratio Index
A. POPULATION GROWTH 1960-1970						
<= 0	1,808	+474	1.36	1,600	+749	1.88
0 <= 10	1,499	+613	1.63	1,774	+1,055	2.47
10 <= 25	1,743	+626	1.56	1,600	+368	1.30
25 <= 50	1,647	+661	1.67	]	+380	1.34
50 <	1,342	+662	1.97			
B. NET MIGRATION 1960-1970						
<= -10	1,908	+743	1.64	1,682	+713	1.74
-10 <= 0	1,453	+458	1.46	1,209	+654	2.18
0 <= 10	1,726	+617	1.56	1,956	+844	1.76
10 <= 25	1,767	+821	1.89	1,966	+495	1.34
25 <= 50	1,077	+463	1.75	]	+304	1.26
50 <	1,721	+565	1.49			
C. PERCENT WHO MOVED TO CURRENT RESIDENCE 1960-1970						
<= 40	1,972	+627	1.47	]	+573	1.54
40 <= 50	1,460	+653	1.81			
50 <= 60	1,757	+619	1.54	1,769	+786	1.80
60 <	1,644	+574	1.54	1,801	+572	1.46
D. BIRTH RATE						
Below average	1,489	+614	1.70	1,657	+660	1.66
Above average	1,738	+620	1.55	1,474	+465	1.46
E. DEATH RATE						
Below average	1,683	+711	1.73	1,556	+436	1.39
Above average	1,507	+450	1.42	1,656	+748	1.82

Table 53

## OCCUPATIONAL STRUCTURE CHARACTERISTICS OF COUNTIES AND DESIRED CIVIL DEFENSE EXPENDITURES

Characteristics	In TR-82 Risk Areas			In Other Areas		
	Desired Expenditures (000,000)	Difference Index	Ratio Index	Desired Expenditures (000,000)	Difference Index	Ratio Index
A. PERCENT EMPLOYED IN MANUFACTURING						
Below average	1,662	+599	1.56	1,797	+797	1.80
Above average	1,546	+648	1.72	1,237	+236	1.24
B. PERCENT EMPLOYED IN WHOLESALE/RETAIL						
Below average	1,504	+494	1.49	1,649	+548	1.50
Above average	1,674	+674	1.67	1,552	+737	1.90
C. PERCENT EMPLOYED IN SERVICES						
Below average	1,649	+716	1.77	1,623	+631	1.64
Above average	1,594	+526	1.43	1,591	+573	1.56
D. PERCENT EMPLOYED IN EDUCATION						
Below average	1,646	+554	1.51	1,560	+728	1.88
Above average	1,565	+758	1.94	1,686	+451	1.36
E. PERCENT EMPLOYED IN CONSTRUCTION						
Below average	1,533	+565	1.59	1,715	+635	1.59
Above average	2,434	+1,045	1.75	1,425	+556	1.64
F. PERCENT POPULATION ON FARMS						
= 0	1,644	+555	1.51	1,579	+720	1.84
0 <= 1	1,780	+947	2.14			
1 <= 5	1,451	+608	1.72	1,438	+118	2.09
5 <= 15				1,753	+914	2.09
15 <	1,114	+912	5.51	1,588	+505	1.47



Table 54

## SOCIOECONOMIC STATUS CHARACTERISTICS OF COUNTIES AND DESIRED CIVIL DEFENSE EXPENDITURES

Characteristics	In TR-82 Risk Areas			In Other Areas		
	Desired Expenditures (000,000)	Difference Index	Ratio Index	Desired Expenditures (000,000)	Difference Index	Ratio Index
<b>A. PERCENT WITH HIGH SCHOOL EDUCATION OR MORE</b>						
<= 33.3						
33.3 <= 45	1,710	+850	1.99	1,038	+122	1.62
45 <= 55	1,537	+587	1.62	1,575	+839	2.14
55 <= 66.7	1,783	+643	1.56	1,739	+894	2.06
66.7 <	1,246	+411	1.49	1,790	+518	1.41
<b>B. PERCENT FAMILIES WITH FEMALE HEAD</b>						
<= 7.5	1,141	+491	1.76	1,496	+396	1.37
7.5 <= 10	1,725	+796	1.86	1,631	+725	1.80
10 <= 12.5	1,437	+507	1.54			
12.5 <= 15	2,089	+645	1.51	1,844	+541	1.42
15 <	1,557	+367	1.31			
<b>C. PERCENT FAMILIES BELOW POVERTY LINE</b>						
<= 5	1,271	+541	1.74	1,805	+592	1.49
5 <= 10	1,712	+653	1.62			
10 <= 15	1,593	+486	1.44	1,309	+687	2.10
15 <	2,047	+1,166	2.32	1,477	+604	1.63
<b>D. MEDIAN INCOME</b>						
<= \$ 8,000	1,594	+816	2.05	1,366	+596	1.77
\$ 8,000 <= \$10,000	1,769	+600	1.51	1,891	+834	1.79
\$10,000 <= \$12,000	1,636	+670	1.69	1,308	+172	1.15
\$12,000 <	1,310	+433	1.49	no cases in the sample		

Table 54 (continued)

Characteristics	In TR-82 Risk Areas			In Other Areas		
	Desired Expenditures (000,000)	Difference Index	Ratio Index	Desired Expenditures (000,000)	Difference Index	Ratio Index
E. MEDIAN DOLLAR VALUE OF OWNER OCCUPIED HOUSING UNITS						
<= \$10 <sup>4</sup> **	] 1,769	+660	1.67	[ 1,615	+695	1.76
\$10 <sup>4</sup> <= \$10 <sup>4.2</sup>						
\$10 <sup>4.2</sup> <= \$10 <sup>4.4</sup>	1,628	+648	1.66	1,681	+739	1.78
\$10 <sup>4.4</sup> <	1,383	+466	1.51	1,488	+326	1.28
				no cases in the sample		
F. AVERAGE 1969 VALUE OF FARM						
Below average	1,704	+707	1.71	1,560	+528	1.51
Above average	1,562	+542	1.53	1,738	+811	1.87
G. AVERAGE DOLLAR VALUE PER ACRE OF FARM LAND						
Below average	1,668	+599	1.56	1,602	+612	1.61
Above average	1,523	+666	1.78	no cases in the sample		
H. PER CAPITA LOCAL GOVERNMENT EXPENDITURES						
<= \$150	1,900	+1,087	2.34	1,405	+557	1.66
\$150 <= \$200	1,100	+464	1.73	2,044	+980	1.92
\$200 <= \$250	1,820	+664	1.57	995	+109	1.12
\$250 <	1,682	+626	1.59	1,831	+683	1.59

- (4) Using the perceived current expenditures again as a benchmark, and except the sole case previously mentioned (counties with relatively low owner occupancy of housing), the ratio index never comes close to 1 and, of course, it does not fall below 1. Thus current expenditures are seen as inadequate, though variably so, in all types of higher risk areas--and these perceived current expenditures, to reiterate, are 10 times as high as were the actual national funding levels around the time of the survey.
- (5) In lower risk areas, in counties with lower than average farm acreage (index of 1.08), with many minority residents (index of 1.11), with some but not many living on farms (index of 1.09), the index tends to hover around its value of 1. It never falls, however, below 1--a value, of course, presenting a situation in which the desired and current expenditures would be equal.

In fact, counties listed under "lower" (current) estimates in Table 47 (Morgan, Colorado; Ogle, Illinois and so on) are also the types of counties with the highest preferred levels of expenditure--counties then where the high perceived "current" investments are seen as quite low compared with what civil defense funding levels "ought" to be.

There are, to be sure, less well to do types of counties, but with relatively few minority citizens, many farmers, relatively lower value of each farm and of each acre of farmland and rather high levels of owner occupied housing units.

The types of counties listed under "higher" (current) estimates (Table 47), in turn, illustrate the more exceptional case of areas where current expenditures are seen as somewhat higher than the preferred levels of investment--though the former exceed actual funding levels by a factor of about 14 and the latter by a factor of 8. These are, in turn, most characteristically highly urbanized areas (but not those with the highest population densities), with many minority residents, with no one or hardly anyone engaged in farming, with relatively low employment in construction, with fewer than average residents under 5 years of age, with some outflow of people due to migration, generally with fewer housing units of the post 1960 period but more than an average of housing construction prior to 1950.

But the clearly overriding theme, despite such differences as exist, is of the following kind: basically, current expenditures are seen as inadequate just about regardless of the area characteristics and an increase by a factor of 1.6 or thereabouts--from about \$1 billion per year to \$1.6 billion per year!--reflects the extent or magnitude of this sentiment.

Certainly it would seem somewhat difficult to conclude that our people say that the nation ought to be spending "nothing" on civil defense (for whatever reasons); or that the nation may have been spending "too much." Even if the absolute dollar numbers may be, as they probably are, confounded by difficulties which many people are likely to experience when confronted with numbers in hundreds of millions or even in billions, the comparison between estimates of current expenditures with the "ought to spend" pattern is both revealing and much more valid as a reflection of the strategic tenor of the nation's thinking toward the end of the last decade.

## XV. CONCLUSIONS

It is not far-fetched to argue that public estimates of existing expenditures associated with any program are a proxy measure of information/knowledge level. People may well underestimate or overestimate what the Government is spending (or what local communities or industry or what not is spending) on this or that. Or, for that matter, public perceptions may be reasonably accurate.

When the case of civil defense in the late 1970s is considered (while recognizing that the late 1970s data parallel the early 1970s results, the latter based on an inquiry carried out nationwide in 1972), it is clear that public knowledge tends to be rather low.

Thus almost 1 in 4 Americans would not, or could not, estimate what the Federal Government may have been investing into civil defense at the time.

This might seem highly problematic: it is and it is not.

Similar percentages of the nationwide probability sample of our people were unable, or unwilling, to also estimate then-current expenditures on poverty programs and on foreign aid. The civil defense related response thus was in no way atypical--at least in face of the limited number of alternatives (poverty programs, foreign aid) with which the respondents were faced.

But the actual estimates of expenditures also reveal a similar problem: our people have overestimated extant civil defense budgets by a factor of about 10, on the average. In none of the area types, resulting from the elaboration of responses by characteristics of counties, was the pattern of perceived expenditures lower than were the actual approximate budgets of the period (hovering around \$100 million).

It would seem impossible not to conclude that the nation's level of information about (costs of) civil defense is rather low. This conclusion is, in fact, reenforced by considering the finding (not further elaborated in this paper) that the self-assessments of knowledge level regarding civil defense (on a rating scale from 0 to 10) yielded the lowest index of the alternative items about which the respondents were asked. Thus, given this particular scale, self-claims regarding knowledge of and about civil defense yielded a value of 3.43 while parallel indices for knowledge claims concerning "the Soviet Union," "national defense," "general world situation,"

"energy situation," "U.S. economy" were all higher (with the highest index of 5.57 related to claims regarding the state of the U.S. economy information/knowledge).

Insofar as data on perceptions concerning "current" expenditures for various programs can be construed as clues to information and knowledge levels, data on moneys that ought to be spent yield information about program acceptance, that is, an aspect of the complex acceptability dimension.

Whatever people may think, correctly or incorrectly, about "current" spending levels, it would be fair to conclude that:

- (a) if estimated desired expenditure fall below perceived expenditures, whether the latter are realistic or unrealistic estimates, the program is the less acceptable the greater the difference between desired and perceived expenses for it;
- (b) if estimated desired expenditures are (about) the same as perceived actual expenditures, and the latter are lower than the factual investments, the program has some problem in public acceptability;
- (c) if estimates of desired expenditures are (about) the same as perceived expenditures, and the latter are, in fact, just about what the expenditures may have been, the program is both acceptable and adequate--and increased levels of funding could possibly run into some acceptability difficulties as would decreased levels of funding. The sharper the change in such actual levels of funding, the greater the difficulties in acceptance under these conditions;
- (d) if estimates of desired expenditures are (about) the same as perceived current expenditures, and the latter are, in fact, higher than actual levels of investment, the program is rather clearly an acceptable one though it is seen as adequately funded even if, in reality, it is not. Thus an increase in funding levels toward its perceived public acceptance level is largely nonproblematic;

(e) if estimated desired expenditures are higher than perceived current expenditures, and these, in turn, are higher than the actual expenditures, the program is viewed as both acceptable and inadequately funded.

The civil defense "case" is of this last, (e), variety. Current funding, as has been repeatedly stated (because it is an important and impressive result), was only about 1/10 of what the public thought it to be. But public estimates of desired level of funding exceeded actual budgets by a factor of 16 and perceived current budgets by a factor of 1.6!

Behind all this, of course, lurks a bothersome and rather fundamental policy problem.

Clearly, our people make statements which reveal lack of information and knowledge regarding civil defense--in this connection, at least of its costs.

To the extent to which the data throughout the following segments of the paper also show rather high acceptance (along with rather high credibility, some of the components of which have been discussed in the previous sections of the paper) of civil defense, it is essential to ask:

Would improved information/knowledge regarding costs of civil defense (much lower actual than perceived costs, to repeat) increase or decrease credibility?

It is easily imaginable that the high levels of acceptance, further elaborated herein, result in part from beliefs that the nation has been taking appropriate measures, including funding levels, to protect our people against the hazards of nuclear war.

Hence, actual information internalization about the very low national investments (when compared with public estimates) could induce the lowering of credibility of extant civil defense or even of any subsequent civil defense programs that fall drastically below the estimated public funding markers.

In turn, the enhancement of actual knowledge regarding the low levels of expenditures might induce, in some people, beliefs that "a lot can be done for very little" so that future upward shifts in funding levels might be less acceptable than they currently would prove to be "if so much can be done for so little." "Credibility" of extant patterns of expenditures with their survivability outcomes might well be increased, though acceptability of enhanced, and more costly, efforts could decline.

There is no easy answer as to what the effects would be if more and more Americans actually became aware of the (a) low "current expenditures," and the (b) low (though increased) expenditures embedded in the present programs of the Government.

Increased public knowledge about costs of civil defense thus does not necessarily represent a comparative advantage for the Federal Emergency Management Agency, as long as the relations (roughly speaking) between actual, perceived, and desired patterns of funding parallel the results of the 1978 survey: there being no reason whatsoever to expect that the 1982 pattern would be dramatically different. But the above assertion misses an important point--a deeply embedded value in our society: our people have the right to know; if they don't seem to know, they have a right to be enlightened as best can be done.

Thus, FEMA, regardless of some of the risks briefly cited above, may have to consider the need for efforts to enhance public understanding of how little it has been spending and how relatively little it would plan to spend in the foreseeable future for large (survivability) payoffs compared with what our people think it has been spending and compared even more with what they think the nation ought to be spending.

The risk is one of declined credibility and even acceptability of civil defense programs. The potential benefit is more vocal clamor by our people for increased expenditures--beyond those proposed by FEMA in this particular timeframe.

The clear benefit is the abidance by the nation's value attached to the importance of dissemination of accurate information and the imparting of knowledge to our people. To complicate matters further: it does not seem all too probable that any campaign, almost no matter how expensive, to enhance the cost-relevant information level of the public would make much of a dent in the public sentiment. Thus a major campaign to "inform" the public in these regards could easily end up being of highly problematic cost-effectiveness disregarding even the potential risks associated with such knowledge changes.

How much actually ought to be spent on civil defense, and over what time periods, is clearly a significant policy issue at all times. Here, perhaps the most important dilemma has to do with difficulties in balancing



budget-driven programs and program-driven budgets save for the rare, and unlikely, type of effort for which highly constrained budgets are adequate to begin with.

The public estimates of either current or desired funding levels, of course, cannot provide an answer supportive of the main policy options since factors of political feasibility as well as opportunity costs are not directly considered (in such data). But the magnitudes of the difference between actual expenditures and perceived current investments, not to speak of the desired levels of budgets, do provide evidence of a great range over which budgets-cum-programs or programs-cum-budgets are unlikely to arouse important public resistance.

This conclusion does discount, naturally, the 8 or so percent of Americans who disfavor any program regardless of budget, and any budget for civil defense regardless of program.

PART D

CRISIS RELOCATION: SOME CONSTRAINTS

## XVI. INTRODUCTION

Two important factors are considered in this section of the report. One has to do with public estimates of whether or not there would be enough time to relocate/evacuate. The second has to do with public view as to whether or not the President would ever urge, if not order, evacuation from the most vulnerable areas of the country.

The respective items in the questionnaire had the following wordings:

"If all people in this area were to evacuate and go somewhere else because of the chance of nuclear war, would there be enough time for all of them to do so; that is, from the time a nuclear war is viewed as pretty certain to the beginning of the war itself? (Question 54, 1978 Instrument)

And, in turn,

"Can you imagine any situation in which the President of the United States would ask people to evacuate the cities and perhaps some other areas of the country?" (Question 51, 1978 Instrument)

In other terms, the items might be rephrased somewhat along the following lines: Is crisis relocation doable? And, would it be (ever) carried out?

The items then tap what has been elsewhere referred to as "use credibility," one of the more specific dimensions of overall credibility of this or that program.

Availability of sufficient, or at least reasonable, warning time is certainly a sine qua non of crisis relocation thinking and planning. The kind of massive relocation that would be required, involving some two-thirds of our people as relocatees and most others as hosts, cannot be accomplished in but a few hours.

Even this is, of course, not strictly so: there are certainly some areas of the country, even some of the smaller (potentially or likely targeted) cities from which relocation could be quite rapid and attainable possibly even in a few hours. But for the most part, crisis relocation planning has to allow for a reasonable, two, three or more days, time in which to act.

To the extent to which our people might think that there would be enough time to evacuate (even if the exact time needed is not directly specified), crisis relocation looms quite credible in this respect.

Insofar as people might be convinced that there simply would not be enough time for crisis relocation, the program runs, at least in this respect, into some--even serious--credibility problems. Similarly, though differently in an important way, one can argue about the item regarding plausible Presidential action: if the President is seen as never opting for crisis relocation, a credibility problem exists even if people thought that there might be enough time to relocate. If, on the other hand, people believe that the President just might avail himself of the crisis relocation option at least under some circumstances (whatever these may be), the program credibility would be high.

But this item is, as has been alluded to, different also from the warning time issue in a crucial manner: if there were enough time to relocate (as seen by the public), all people in principle could evacuate (spontaneously) anyway and thus a formal Presidential action is not in itself a circumstance on which effectiveness of crisis relocation has to depend.

In other terms: program credibility is therefore more sensitive to the availability of warning time issue than it is to anticipations about likely Presidential action though both are clearly highly relevant factors. Two salient items of information were, however, not included in the study--a matter of the overall questioning time constraint rather than an omission somehow occasioned by the researchers.

The meaning of "enough time" was not clarified: did our people think in terms of a day, two, three or what? A recent Gallup Poll, commissioned by the Federal Emergency Management Agency, sheds some light on this matter. Carried out in June, 1982, the study (involving a phone interview with 1,023 respondents, nation-wide) shows that some 17.8 percent simply did not know and did not venture a guess as to how many days it would take to "evacuate most of the people who are in (this) area."

Some 19.3 percent estimated that "one day" would suffice, 15.4 percent claimed that the need for "two days," another 13.8 percent believed that it could be accomplished in three days--with remaining respondents scattered in answers including "four days" to "nine or more" days (the latter response originating from 9.1 percent of the sample). Finally, about 3.8 percent thought that such a relocation "couldn't be done at all" (for whatever, futher unspecified, reasons).

If the "don't knows" are disregarded, the median for the sample turns out to be about 2.5 days--certainly not an altogether unrealistic assessment.

The other important item which was not included would have sought to clarify the "circumstances" or "conditions" under which people believed the President would opt for crisis relocation--that is, at least those respondents who thought the option would ever be exercised.

A question was included in the instrument to probe about the likelihood of (spontaneous) evacuation should our people become informed that the Soviets were initiating evacuation of their cities and other risk areas. But this does not in itself reveal whether or not such a Soviet move might be viewed as a likely "trigger" for Presidential action and/or what other such "triggers" might have come to mind of the interviewees in the study.

The inclusion of such clarifying probes in subsequent research would then clearly prove advisable especially to the extent to which either the warning time issue or the Presidential action issue or both were driving lower use credibility of crisis relocation than otherwise could be the case.

## XVII. TIME TO RELOCATE

The basic item on perceived availability of sufficient time in which the evacuate/relocate yields the aggregate percentage results presented in Table 55.

Table 55

WOULD THERE BE ENOUGH TIME IN WHICH TO RELOCATE?

	<u>Percent</u>
Definitely yes	1.7
Probably yes	16.7
Unsure, depends	16.5
Probably not	41.9
Definitely not	18.6
Don't know/no answer	4.6

Thus, clearly, most people in the late 1970s timeframe did not think it likely that there would be enough time to carry out crisis relocation.

Further light is shed on this obvious credibility difficulty of crisis relocation programs by yet another item in the study, a question which appeared much earlier in the course of the interview than did the item under analysis here:

"In your judgement, how much time would there be between your becoming pretty certain that a nuclear war is coming and the beginning of the war itself?"  
(Question 11, 1978 Instrument)

Table 56 shows the distribution of responses:

Table 56

PERCEPTION OF A "SURGE" PERIOD

	<u>Percent</u>
(Essentially) no time	19.6
Minutes (15 to 30)	11.7
Hours	15.2
About one day	5.7
Two-three days	10.2
About a week or even more	20.7
Don't know/no answer	16.9

Many Americans then were thinking in terms of a very short time span between a fair degree of certainty that catastrophic troubles lie ahead and the onset of hostilities. In other words, a good deal of national thinking appears to have been attuned to the notion of "tactical warning" only--and, thereby, to the idea of a "sudden," if not entirely "out of the blue," type of attack.

Since crisis relocation planning is, and must be, predicated on the availability of strategic rather than only tactical warning, the item underscores the possible credibility problem in relation to crisis relocation.

Now it is not possible to tie the generic "time availability" item (as in Table 55) to the "near certainty of war outbreak" item (as in Table 56) in a robust manner. This is so mainly due to the fact that there is no intervening item available in the study which might consider the possibility of crisis relocation as a crisis management measure--thus a measure to help defuse a highly threatening situation and prevent, rather than respond to, war. Yet, of course, crisis relocation would not be contemplated--not to speak of its being implemented--were it not under circumstances in which the threat of war seemed "pretty certain." So there does exist some interpretable linkage of the items in this sense, but such interpretations are weakened by lack of data on the manner in which these issues are actually interrelated in the thinking of the respondents themselves.

Now by assigning descending values of 100, 75, 50, 25 and 0 to the qualitative response range ("definitely yes" to "definitely not"), an evacuatability index results. It would, of course, have a value of 100 if all respondents had thought that there would be "definitely" enough time to relocate; and it would be "zero" if they had stated that there would "definitely" not be enough time in which to evacuate their particular area of the country. Table 57 shows these evacuatability indices.

Table 57

EVACUATABILITIES

	<u>Index</u>
Total sample	34.5
In TR-82 high risk areas	33.8
In other areas	36.8

As is obvious from the data of Table 55 already, the indices are rather low. While in the high risk areas the index is lower than it is in the lower risk areas of the nation, the difference is certainly not a major one. Everywhere then, regardless of (TR-82) risk level, the prospects for having enough time in which to relocate are not seen as particularly promising.

To what extent can the data on warning time (as lapse of time between near-certainty of an impending conflict and the conflagration's onset) provide further information on the kinds of meanings that might be associated with the evacuatability dimension (as availability/unavailability of adequate time in which the relocation could occur)?

Table 58 gives the basis on which some statements in this regard can be made.

Table 58

EVACUATABILITY AS A FUNCTION OF  
TIME BEFORE ONSET OF WAR

<u>Warning time before war onset</u>	<u>Evacuatability*</u>	
	<u>In TR-High Risk Areas</u>	<u>In Other Areas</u>
No time at all	29.5	31.6
Minutes	31.6	28.6
Hours	30.7	38.7
About a day	35.1	43.0
Two-three days	45.5	41.7
A week (or even more)	35.2	42.2
Don't know/no answer	33.5	34.6

\*The index derivation discussed in text. Index as in Table 57 above.

There are then some differences displayed in Table 58. Evacuatability is higher, but not much so, in the TR-82 risk areas when the respondents think that one day or more are likely to lapse between the perceived imminency of war and its outbreak.

In lower risk areas, the cutting edge of the difference lies at "hours" (or more time) available, not necessarily a counterintuitive result since most of the "other than high risk" areas are rural ones in which, were relocation contemplated (as it is not since by definition these are "safer"



areas and thus mostly "hosting" areas for high risk area relocatees), it might be achievable "within hours" indeed.

Nor is the cutting edge around "one day" (and beyond) an unreasonable one among the higher risk area residents since, in fact, many high risk areas could be essentially emptied of inhabitants within about a day.

Yet, central to the result presented in Table 58 is the observation that the differences are not sufficiently sharp to yield an adequate clue as to what the respondents meant, in terms of time, when they defined the available time for relocation as "adequate" or "inadequate" (by responding whether or not there would be "enough time" in which to evacuate).

All the evacuatability indices remain relatively low--regardless of area risk and regardless of the time estimate of the duration of definite clues prior to the onset of war.

There may be several interpretations of this, but one merits particular attention: the data thus may be indicative of a confusion, in public thinking, between "tactical" and "strategic" warning and of even a more fundamental underlying sense that an "out of the blue" or rather "sudden" conflict is as, if not more, likely as is a conflict following a period of increasing tensions and thus escalating probabilities of open hostilities.

How does the evacuatability index behave in different types of counties?

The index never reaches the 50-50 (evacuatability) marker. This is so both in higher and lower risk areas of the country. Invariably, it is therefore "tilted," so to say, in the direction of lack of available evacuation time. Everywhere then, the findings point to a credibility problem associated with crisis relocation: it is seen as more unworkable, in terms of available time (at least), than workable.

Here, focus is placed on high risk areas only: this, of course, is due to the fact that the evacuatability aspect is particularly salient in areas from which the residents may have to consider relocating.

Table 59 highlights such main differences as the data reveal.

The major pattern of differences seems clear enough: factors bearing on characteristics of socio-economic wealth of the respective areas of the country tend to account for such differences, modest though they are, as exist. Evacuatability indices are consistently lower in the relatively higher socio-economic status counties, and higher in the relatively lower SES areas.

Table 59

HIGHER AND LOWER EVACUATABILITY INDICES IN TR-82 HIGH RISK AREAS

<u>Higher Evacuatability</u>		<u>Lower Evacuatability</u>	
<u>Characteristic</u>	<u>Index</u>	<u>Characteristic</u>	<u>Index</u>
Very low population density	40.6 ----->	High density: 5,000-10,000 per square mile*	25.8
Not urbanized	38.6 ----->	Entirely urban	32.2
High owner occupancy	34.3 ----->	Very low owner occupancy	29.4
Small population growth**	35.7 ----->	High population growth	29.2
Fewer moved into residence in the 1960s	36.0 ----->	High residential movement in the 1960s	31.6
1 to 5 percent living on farms***	39.9 ----->	None living on farms	31.8
Few high school graduate	36.2 ----->	Many high school graduates	30.6
10 to 15 percent below poverty line****	40.7 ----->	Few below poverty line	31.6
Low median income	45.8 ----->	High median income	30.8
Low value of owner occupied units	37.5 ----->	High value of owner occupied units	28.7
Low local government expenditures	39.8 ----->	Higher local government expenditures	32.3

\*Those in areas with very high density (over 10,000 per square mile) yield a value on this index of 36.2.

\*\*In counties with negative growth, the index is 34.4 (next to the highest).

\*\*\*The value is 38.7 (next to the highest) with 5 or more percent on farms.

\*\*\*\*For those in counties with 15 or more percent below the poverty line, the index is 39.7 (next to the highest value).

But only a few of the differences are rather large ones: between counties with low and high median incomes (a difference of 15 on the index), between counties that are relatively unpopulated (very low densities) and those which are highly populated (a difference of 14.8 on the index), and counties with relatively many households below the poverty line and those with very few below poverty line (with a difference of 9.1 on the index).

If the indices uniformly fail to exceed their mid-value of 50 (beyond which the response that there would "probably" or even "definitely" be enough time in which to relocate), none also fall below the value of 25 (which represents the "probably not enough time" type of response).

The index numbers can be construed to imply the following kinds of things:

- (a) in some 25 to 45 percent of crisis, if not war, inducing situations (or scenaria of such situations), time to relocate is unlikely to be available;
- (b) between 25 to 45 percent of risk area residents might find time to relocate to be sufficient; or
- (c) the relocatability of individuals and individual families has a time-dependent probability of somewhere between .25 and .45.

These then are results not dependent on willingness to relocate--an issue yet to be considered later in this paper--but simply on the time-related opportunity to do so.

The relative stability of the data across the nation, and therefore regardless of more specific characteristics of the respective counties, further supports the conclusion that the result is partially a by-product of convictions having to do with expectations that a nuclear war, should it ever come, would be triggered off rather rapidly, if not altogether in the way of a surprise.

The subtle differences that do exist, in turn, suggest that the evacuatability problem is more serious in urbanized and more well-to-do areas than it is in less urbanized and less well-to-do risk areas.

In all, of course, there is a credibility problem here insofar as it can be accepted as a given that perceptions of workability of crisis relocation are a relevant ingredient in the program's credibility (and, indeed, its acceptabilities).

## XVIII. PRESIDENTIAL ACTION

Whether or not the President of the United States would ever ask the residents of high risk areas to relocate is certainly not obvious. It depends clearly on many circumstances among which some seem of paramount relevance:

- (a) whether or not the nation did have, at the time of need, reasonable relocation plans with reasonable prospects for the success of relocation;
- (b) whether the Soviets were evacuating their cities and their likely risk areas and the circumstances in the international arena appeared to point toward sharply increased likelihood of war;
- (c) whether or not the President would estimate, given then-extant conditions, that crisis relocation on the part of our own nation would tend to increase, decrease or maintain the level of threat--and thus, what effects might crisis relocation have on the crisis management process itself;
- (d) whether, in fact, sufficient strategic warning of a possible impending outbreak of hostilities would be available to the President at all, and whether it would be available with lead-time sufficient for the President to conclude that crisis relocation, rather than the "best one could do" on an in-place basis, would enhance survivability.

Other factors could be readily imagined, some of which include consideration of the characteristics of a particular President and, of course, of his/her closest advisors and associates as well as of the most relevant officials of Government (the head of the CIA, the Joint Chiefs, the Secretary of Defense, the Secretary of State, and so on).

Considerations of the economic effects of relocation, too, could not but loom very large especially if there remained some hope that the particular crisis could be resolved satisfactorily (or at least tolerably) without its eventuating into war (even without the crisis management effects of crisis relocation).

It may, on the face of it, appear absurd to contemplate the relocation--for an unknown period of time with unknown outcomes--of some 150,000,000 Americans, or even more. The data of Table 60 in their basic percentage form, however, do not sustain such an argument: two-thirds of our people in the late 1970s could imagine circumstances under which crisis relocation would be opted for by the President. And another 10 percent (roughly speaking) were unsure--thereby potentially saying that the President just might do so--or might not do so.

Table 60

PERCENTAGES OF RESPONDENTS EXPRESSING VIEWS  
ON POSSIBLE PRESIDENTIAL ACTION

	<u>Percent</u>
President would ask people to relocate*	66.7
Unsure	9.4
President would (never) ask people to relocate	17.0
Don't know/no answer	6.9

\*Read this to mean: "there exist circumstances under which the President..."

To repeat a caveat stated explicitly previously (Chapter XVI): the study does not reveal what kinds of "circumstances" come to mind of those who say that the President would act, or who are unsure whether or not he might ever opt for crisis relocation.

Nor is it possible to tell what differences, if any, might exist if the question were broken down into its two highly policy-relevant components: whether the President would order evacuation or whether he would urge or recommend it but not "order" it. More on this, however, later. A simple index again, in this instance of Presidential Propensity to Act (not generically, but only with respect to crisis relocation) results by assigning values of 100 and 0 (zero) to the extreme responses of "yes" and "no" respectively, and by evaluating each mid-point ("unsure") answer as 50. Table 61 presents this propensity measure.

Table 61  
PRESIDENTIAL ACTION PROPENSITY

	<u>Index</u>
Total sample	71.6
In TR-82 high risk areas	71.4
In other areas	72.4

Two conclusions are obvious:

For one, if the anticipated willingness of the President to deploy crisis relocation is a relevant measure of use credibility, as it undoubtedly is, the results show high use credibility of crisis relocation programs. People consider it realistic that under some (though unspecified) circumstances the President may ask Americans to move from higher to lower risk areas.

Second, the perceptions of the President's propensity to act in this manner are just about the same in the TR-82 high risk areas and in the safer areas of the country. It follows from this also that the use credibility estimates are about the same regardless of risk level (of the TR-82 variety).

Considering the results discussed in Chapter XVII above, this all amounts to saying: though there may not be enough time to carry out crisis relocation in terms of warning, there do exist circumstances under which the President would, in fact, ask people to relocate.

Hence, time availability is a significant constraint but Presidential action is not.

The data of Table 62 focus on some of the key differences among the respondents in terms of the characteristics of the counties in which they live.

None of the "clustered" factors really dominate the existing pattern of differences in the higher risk areas (that is, the clusters of global, compositional, dynamics, occupational and socio-economic status indicators).

In the very low density areas, the estimates of Presidential propensity to act are high--and they are (relatively) lower in the very high density areas. This result, of course, is parallel to that reported previously with regard to the evacatability dimension in which also the very low density areas yielded high values and the high (though not the highest) density counties lower values of the index.

Table 62

PRESIDENTIAL PROPENSITY TO ACT, HIGHER AND LOWER,  
BY CHARACTERISTICS OF TR-82 HIGH RISK AREAS

<u>Higher Action Propensity</u>		<u>Lower Action Propensity</u>	
<u>Characteristic</u>	<u>Index</u>	<u>Characteristic</u>	<u>Index</u>
Very low density	74.2 →	Very high density	60.5
High population growth	74.5 →	Negative population growth	65.2
Medium (50-75) percent urbanized	80.5	Entirely urban	62.4
Many high school graduates	74.6	Few high school graduates	58.5
Below average 65 year olds and older	74.8	Above average elderly	64.9
Below average services employment	76.2	Above average services employment	66.6
High percentage owner occupancy	76.7	Low percentage owner occupancy	61.8
Less than 1% living on farms	80.5	1-5 percent on farms	69.6

But the pattern is contradicted when the effects of educational composition of the population is considered. In fact, the presidential propensity to act measure has its lowest value (and it is a value lower than that in terms of any of the county traits) in areas with few high school (or more formally educated) residents--and it reaches a higher value where there were many high school graduates.

By contrast, the evacuatability index behaved quite differently: it was the higher the lower the percentage of residents with high school or more formal schooling.

In entirely urbanized areas and where the owner occupancy of housing units is low (and thus rental percentages, by implication, are high), the propensity to act index is low; it is high in areas with medium level of urbanization and with high percentage of owner occupancy of dwelling units.

An important difference (16.1 index value difference) concerns the educational background of residents; the density factor differentiates in terms of a 13.7 magnitude of difference on the index, and owner occupancy pattern by a value of 14.9. The urbanization level yields a difference of 18.1. None of the indices fall below 50 (an indicator of a more dominant belief that the President would be unlikely to act to ask for crisis relocation under any conditions); and none exceed 80 percent (except by half a point).

The range thus straddles what would be construed as qualitative responses that the President would "probably" act to seek crisis relocation under "some circumstances."

The lower index values are of the "maybe" variety but in the direction of "probably yes." The higher index values are just around the "probably yes" marker (if the simpler index is interpreted in the sense of the other indices presented throughout the paper).

While in the discussion of evacuatability, the lower risk areas were not explicitly considered, the matter is quite different with respect to the Presidential action propensity: a Presidential urging of crisis relocation stands to have a major effect on, and consequences for, potential lower risk areas as on high risk areas, since the latter predominantly have to function as "hosts" for the incoming flocks of possible relocatees.



Table 63

HIGHER AND LOWER PRESIDENTIAL ACTION PROPENSITIES  
IN LOWER (TR-82) RISK AREAS

<u>Higher Action Propensities</u>		<u>Lower Action Propensities</u>	
<u>Characteristic</u>	<u>Index</u>	<u>Characteristic</u>	<u>Index</u>
High population growth	81.2	Medium (10-25 percent) growth	65.1
High net migration	75.7	Low net (positive) migration	64.6
Medium (5 to 15) percent minority residents	80.0	Fewer minority residents	69.0
Above average percentage of residents under 5 years	82.5	Below average under 5 years	67.6
Below average percentage 65 years and over	78.8	Above average of 65 years olds and over	67.6
Above average birth rate	83.3	Below average birth rate	69.5
High owner occupancy	81.8	Lower owner occupancy	70.9
Higher than average value of farm	82.1	Lower than average value of farm	69.4

Table 63 then sums up the key differences, by county characteristics, in the lower (TR-82) risk areas. The pattern is dominated by population growth, high immigration, higher than average birth rate areas yield higher indices than do counties lower on these particular indicators. Many young people (below 5 years of age) and fewer elderly citizens (65 years of age and older) also typify respondents who live in such areas with higher average indices of presidential propensity to act than is the case in counties with the opposite compositional characteristics.

The single largest difference (of 16.1 on the index) has to do with population growth characteristics: in the areas with highest population growth, there is more of a conviction that the President might opt for relocation than exists in the growing, but less growing, areas.

The index differences of 14.9 contrasts counties with many, as opposed to fewer, very young children--those under 5 years of age, and a difference of 14.8 refers to counties differentiated by above and below average birth rates.

Counties like Chafee, Colorado; Saline, Illinois or Lawrence, Arkansas are illustrative of the "lower" index pattern: that is, the types of counties in which the likelihood of Presidential action is lower. In turn, counties, also in the lower risk tier of areas of the nation, like Clinton, Michigan; Washington, Wisconsin; Hawkins, Tennessee or Shelby, Ohio are more typical of the "higher" Presidential propensity to act indices.

But to repeat: all the indices are relatively high; thus, there are no counties, whether in high risk or lower risk areas, in which the respondents would have thought that there exist no circumstances under which the President would invoke the possibility of crisis relocation.

The "use credibility" of crisis relocation is, therefore, rather high even though its "workability" (an aspect of effectiveness) due to time availability constraints is also quite generally rather low.

## XIX. CONCLUSIONS

It has been postulated that beliefs regarding availability or unavailability of time in which to relocate is an aspect of credibility of crisis relocation programs.

Given this premise, the evacuatability indices are invariably rather low and thus point to a credibility problem in this regard.

No data, of course, exist to determine the exact reasons, or claims regarding reasons, for these estimates: it is, therefore, not clear whether people attribute this low evacuatability mainly to the perception of a sudden, or out-of-the-blue, conflict, to the notion that strategic warning would not be forthcoming, or that relocation, even were it to be asked for by the President, might not be implemented with sufficient lead time, or, finally, whether crisis relocation would not take more time than would be available even were a decision to relocate made "promptly" (relative to the receipt of strategic warning by the Government).

But since most people do think of warning time in terms of minutes or hours, or perhaps of the one day variety (and quite a few anticipate essentially no warning time at all), the most plausible indirect interpretation suggests that a significant proportion of Americans, even a majority, seem to imply the greater possibility of tactical rather than strategic warning and thereby allude to nuclear war as something most likely to come about quite suddenly, if at all.

The 1982 Gallup (FEMA-sponsored) data support this conclusion as well, but the story is a somewhat different one. Here, the respondents in significant numbers express their conviction that their area's relocation might take many days and thus time may prove to be "unavailable" even if strategic warning itself were "available."

The evacuatability indices are, furthermore, relatively low across the country and regardless of the socio-demographic profiles of the counties in the sample. The differences, by county type, are modest ones: consistently, however, counties that must be characterized as being more well-to-do yield lower evacuatability (and thus, credibility) indices than do the poorer counties.

Now it is reasonably clear that it is not the belief that the President would fail to act which accounts for such results. The measures of Presidential action propensity (to ask for crisis relocation) yield rather high

values, and these, in turn, can be construed as proxy measures of (use) credibility.

If the index values are retranslated into approximate verbal meanings, then the bulk of the story is about as follows: under some (unspecified) circumstances, the President would probably, though certainly not definitely, act to ask our people to abandon riskier areas and move to lower risk locations; but there would probably, though not definitely, not be enough time available (or left?) in which to accomplish such a nationwide crisis relocation.

The low evacuatability estimates, of course, present a kind of policy problem to the extent to which Government leadership, and the Federal Emergency Management Agency in particular (on whatever information basis), have come to conclude that the most likely onset of nuclear war, should the cataclysm ever threaten the nation, is one which would permit strategic warning while the more out-of-the-blue types of attacks have become much less likely than they may have seemed a decade or so ago.

The key to the policy problem has to do with choices regarding the extent to which some major effort ought to be made to help inform the public about the most likely scenarios associated with the potential onset of nuclear war.

Whether such an effort, if at all, were to be undertaken under relative "normalcy" conditions (that is, circumstances in the international arena in which open conflict does not appear too likely at least in the immediately foreseeable future) or only in the context of rapidly rising tensions presents an important policy issue. In this regard, the central dilemma rests with choices regarding possible by-products of activities to inform the public: fear arousal is, of course, one such possible by-product and much could be said on both sides of the issue itself. For it does not follow that realistic fears or worries would not enhance national emergency preparedness but it is far from obvious how to ensure that such fears would become, or remain, "realistic" and "constructive" (if they can so become in the first place) rather than "excessive" and potentially demoralizing (even to the point of some public demand for the kinds of concessions, on the premise that this would increase the prospects for peace, which otherwise would not fare well in the broader body politic).

But this particular credibility problem, one having to do with availability of time in which to relocate, may resolve itself also without any FEMA (or other agency) explicit and focussed intervention--even were such actions contemplated.

In late 1978, the timing of the research, there was very little in the way of public talk concerning crisis relocation. To some, however, PD-41 of President Carter (and publicity surrounding it) may have provided a clue that Government does consider crisis relocation at least feasible.

President Reagan's FY '83 budget proposal, the civil defense aspects of which have also received considerable publicity, further represents a leadership commitment to the conviction that crisis relocation "makes sense," and that it is, with all its problems and limitations, seen to be feasible.

Thus to the extent to which crisis relocation planning continues publicity about it is also likely to remain sustained even though at oscillating levels of intensity. Both supportive and negative publicity, in this respect, stand to have the effect to sensitize the nation to the seriousness with which crisis relocation posture is being pursued and thereby gradually increase public awareness, if indirectly, of the fact that Government leaders do believe that there would be time enough to relocate--for why otherwise engage in such programmatic efforts?

The point is this: there may remain other reasons for which people fail to accept crisis relocation, or why they might consider the program to be of low credibility; but time itself has been eroding, and is likely to continue to erode, the low credibility attributable to the time-constraint itself.

There exists, indeed, an issue within an issue: over time, under the assumptions implied in the previous statements, our people may come to be convinced that, indeed, crisis relocation is "doable" at least with respect to time availability. And thus, indirectly, our people may reach the conclusion that sudden attack probabilities have become so low as to disregard the prospects altogether. Thus if today, or at least in the late 1970s, the "out-of-the-blue" attack concerns seemed the dominant ones, or at least very strong ones, it is equally plausible that the emphasis on crisis relocation might produce an opinion climate in which such attacks are, as it were, no longer "feasible" or not "likely at all."

How to both insure that people understand that the most probable threats involve a major international crisis getting "gradually" out of hand while also maintaining the belief that this does not preclude the possibility of a sudden onslaught is then clearly such an "issue within an issue."

Federal Emergency Management Agency programs which stress in-place protection even though focussing most effort and resources on crisis relocation might, in and of themselves, generate the desirable type of balance between these extremes.

Now the high credibility of the possibility that the President might indeed ask our people to relocate presents no policy problems, or at least no major ones. But there are at least two significant issues involved.

One has to do with the desirability or appropriateness of a more explicit Presidential announcement that, in fact, crisis relocation might be invoked under some circumstances. Undoubtedly, such a statement would have some benign effects on program credibility and also on its acceptance. But since the action propensity already yields high indices (of credibility that the President might so act), the effect could at best be marginal. What needs then to be weighed in efforts to resolve this particular policy issue is whether such marginal effects on the public's acceptance of the program would outweigh the possible more negative consequences, international for the most part, of an explicit and articulated Presidential commitment to any particular course of action, including a statement regarding expressed willingness to deploy crisis relocation. Because of the effects on flexibility with respect to a variety of options, the President would clearly not be well advised to explain (even some of) the conditions under which he might choose to ask our people to relocate; and without such an explanation, a generic statement only begs the key question.

Again: both PD-41 and the present Administration's budget/program recommendations to the Congress amount to an indirect statement that, indeed, there exist some circumstances under which crisis relocation might be opted for. Again: the strong indices expressing the conviction of the nation that the President could, under some conditions, ask for crisis relocation also do not seem to provide support for the viewpoint that the President ought to do "more" in the way of explicit statements than has been done thus far: at least not at this time.

The second major policy issue associated with potential Presidential action is of the following kind: should crisis relocation planning be predicated on the notion that the President would issue a relocation order or that he would urge, recommend, entice, encourage relocation but not order it?

The current data in no way contribute information useful toward the resolution of this difficult policy issue. But clearly its resolution, at some point, is anything but trivial: crisis relocation planning based on a Presidential order would have to confront the question of enforceability and thus also the question as to what would be done about non-compliance (those who would not obey such orders), by whom, when and how. The problem is a real one even if one were to assert that nothing would be, or could be, done about those who would fail to comply--but then the "order" has automatically just the force of a strong recommendation anyway.

Crisis relocation on a more voluntary basis, grounded in Presidential urgings and recommendations, opens up planning questions as to what to do, if anything, to provide protection for the stayputs (people who would not willingly leave the high risk areas) and, of course, the extent to which providing explicit protection for stayputs might not enhance the proportions of those who would not leave (since they have a legitimate expectation that they would be protected somehow no matter what).

Since presumably crisis relocation orders or recommendations would, in the real world context, be activated by the Governors of our states, the policy issue of "ordering" versus "recommending" is relevant also at the level of the respective States of the Union.

And this, of course, again entails a major issue within an issue: if the crisis relocation plans are based on the more voluntary movement of our people--and thus the President would not order but only demand, or urge or recommend--is there a need to consider standard and even binding procedures under which the respective Governors would be expected to comply or under which they, in their particular states, might choose to "wait" yet longer, or even recommend--contrary to the President--against relocation?

What our people may be thinking about these underlying policy matters is, to repeat, not clear at this time.

PART E

CRISIS RELOCATION: ACCEPTABILITY



## XX. INTRODUCTION

The issue of crisis relocation credibility has been addressed along several lines: for one, in terms of threat perceptions to determine how credible is the hazard of nuclear war itself and how the public sense of the prevailing levels of threat may vary across the nation; second, in terms of effectiveness of civil defense in a more generic sense and of particular classes of programs more specifically--to wit, fallout shelters, blast shelters and crisis relocation. In this regard, of course, the relevant indices had to do with the public estimates of survivability under various alternative postulated conditions.

Third, cost estimates, both current and desired, were used to provide some clues to another aspect of effectiveness credibility though such variables as costs also shade significantly into the (conceptually delineated) domain of acceptance.

Fourth, consideration was given to two key questions: Could crisis relocation work in terms of time availability? And, would the President ever opt for relocation, that is, ask people in high risk areas to move to areas viewed, by whatever standards of the day, to lower risk areas of the country?

Here, two items of the 1978 research are explored in further detail. They both shed some important light on the public acceptability of crisis relocation.

One has to do with the desirability of a national policy to evacuate some of our people. The second one is even more specific: should the nation have crisis relocation plans?

The former item (policy desirability) appears in the 1978 instrument in the following form:

"Suppose in tense situations which might precede a war, it were the government's policy to evacuate the populations of large cities and communities near military installations. How desirable do you feel that would be?"

(Question 42D, 1978 Questionnaire)

The scale, provided each respondent on a separate card as a guideline, permitted responses ranging from (-3) to (+3), standing for "highly undesirable" and "highly desirable" answers respectively.

The item was used in the context of a small series of similar questions: one involving a program to use "all available spaces in public buildings" which provide fallout protection, to mark them as shelters and to stock such areas with whatever is necessary for survival--thus, in effect, the continuation of the Surveying, Marking and Stocking Program of the 1960s; two, provisions to survey private homes and to inform the residents about the extent to which some area (generally, some corner of a basement) would qualify as a fallout shelter or to provide information how upgrading some of the home could be accomplished--that is, essentially a continuation, and even expansion, of the Home Basement Survey program which was carried out in some 28 states of the northern tier of the nation (where there are many, or significant numbers, of basements); three, a program for the Federal government to finance such additional costs as might be incurred by the inclusion of fallout shelter in buildings constructed "by non-profit organizations such as hospitals and schools"; four, the aforementioned prospect of evacuation--an item on which this part of the report shall focus; five, a program to build blast shelters; and, finally, the possibility of ending "the civil defense program" entirely.

The second major item at the hub of this section of the paper was as follows:

"Should we have such plans?"  
(Question 53, 1978 Questionnaire)

The item would not be self-explanatory were it not for a prior question which immediately preceded it:

"As best you know, do we in America have actual plans to evacuate cities and other risk areas in the event of a crisis in which war seems very likely?"  
(Question 52, 1978 Questionnaire)

The "should we have such plans" question was asked of all respondents, including those (some 26.9 percent) who said that such plans already did exist (in response to the above Question 52). This decision was prompted by the notion that even those who might, somewhat incorrectly at the time, feel that such plans were in existence could feel that the nation ought not to have relocation plans or, of course, that it ought to have them.

The item wording including the term "actual plans" sought to refer to existence of relocation/evacuation plans. But it is not quite so easily interpretable since the wording, perhaps unfortunately, may not have fully conveyed the central focus of the question. This seems indicated by the already mentioned fact that almost 27 percent of the respondents believed that such plans already did exist. Thus it may well be that many respondents took the then evolving discussions concerning crisis relocation planning for the "existence of plans," thereby using the term "plan" more generously than had been the actual intent of the query. Be it as it may, the item pertaining to the "should" dimension of crisis relocation plans, having been asked of all respondents, avoids some of this ambiguity and certainly provides a good clue to the acceptability of crisis relocation planning (not necessarily therefore of all aspects of crisis relocation) as a measure of national preparedness.

The specific item under discussion here ("should we have such plans?") allowed for five main response categories--naturally, with the option not to respond at all (refusal to answer the question for whatever reason) or to say "don't know." The categories were, once again, "definitely yes," "probably yes," "undecided, depends," "probably not" and "definitely not."

"Plans" are, in an important way, one of the processes whereby a "policy" begins to be implemented. Hence, in this analysis, attention is paid first to the "policy to evacuate" item and then to the desirability of "plans" item--imaginably, one could have a policy to evacuate vulnerable areas without actually formulating plans at least on an ex ante basis (even though this is not an altogether likely circumstance and, as the flow of events has shown, not an actual one: the President's budgetary recommendations in their explanation are predicated on the idea that it may well be a policy option to relocate high risk areas and that appropriate planning, in all its complex respects, needs to be carried out as a way of "putting this option into place.")

Clearly, if Americans would consider an "evacuation policy" to be undesirable and if they also thought that the nation ought not to have evacuation plans, the conclusion would have to be drawn about low, even negative, acceptability of crisis relocation in toto; by contrast, favorable

dispositions toward "relocation policy" and toward crisis relocation "plans" would go a long way to allow the conclusion that the program, in general terms, is acceptable.

In this part of the report these issues are explored in some detail.

## XXI. CRISIS RELOCATION POLICY

To begin with, Table 64 sums up the response patterns in percentages of those who gave the alternative answers to the item regarding the desirability of a national policy "to evacuate cities" and "other areas."

Table 64

### RELOCATION POLICY DESIRABILITIES

<u>Scale response</u>	<u>Percent</u>
-3	6.9
-2	4.0
-1	5.5
0	13.4
+1	17.1
+2	17.9
+3	30.1
Don't know/no answer	5.3

Thus some 16.4 percent of the responses of the total sample fall into the negative categories of the number scale. By contrast, 65.1 percent of the respondents were in the positive categories. And only some 5 percent did not answer the question (4.9 percent, in fact, were don't knows and only the remaining few were unwilling to answer for whatever reasons).

The concept of evacuation (a term which had been used in the questioning because of its then greater currency in communications) at the policy level clearly meets with considerable public acceptance.

There is, as the data of Table 65 show, very little difference in the desirability indices between residents from (TR-82) high risk areas and others. If anything, the higher risk area residents yield a slightly higher acceptability index than do interviewees who resided in lower risk areas of the nation. But to repeat: the difference of 0.12 points on a scale that ranges from (-3) to (+3) is obviously not substantively significant.

Table 65

RELOCATION POLICY: DESIRABILITY INDICES

	<u>Index*</u>
Total sample	+1.15
In TR-82 high risk areas	+1.18
In other areas	+1.06

\*Possible index range (-3) to (+3).

Now a review of the data when elaborated by characteristics of the counties in both higher and lower risk areas leads to the following summary conclusions:

- (1) Regardless of characteristics of the high risk counties, the acceptability index (desirability of relocation policy) never falls into the negative range and never even approximates the mid-point (zero) value of the scale.
- (2) It also never exceeds the scale value of (+2) and also does not approach it.
- (3) The same conclusions, both about higher and lower index values, hold for the low risk areas: the index is never negative and never comes close to zero value; it never exceeds scale value of (+2), nor does it approach it.
- (4) The highest acceptability index in high risk areas comes about in counties with low occupancy of housing units by their owners (the index is +1.72).
- (5) The lowest index value in the high risk counties is produced by respondents residing in areas with median income in excess of \$12,000 per year (the index has a value of +0.68).
- (6) In lower risk areas, the highest index value (of +1.34 only) shows up in counties with relatively many (12.5 percent or more) households headed by women.
- (7) The lowest value is +0.44 and marks counties with high population growth during the decade of the 1960s (25 percent or more).

For the high risk areas, Table 66 gives some of the subtler differences between higher and lower index values. Included are also the few county characteristics for which the differences are quite small but are, nonetheless, clues to a pattern because of the unimodality of the indices.

Undoubtedly, characteristics yielding clues as to the socioeconomic well-being of the counties are among the more important factors in such differences as exist: median income, educational background of county residents, female headed households, people below/above poverty line, median values of (owner occupied) housing units.

Similarly, some of the factors in the "population dynamics" cluster of variables appear here: county net migration, and residential mobility in the 1960s. Population density and county urbanization level (themselves aspects of what has been termed "global" characteristics) also play some role in the differences.

In the lower (TR-82) risk areas, socio-economic status and population dynamics variables are also most salient in pointing to such differences as can be uncovered by elaborating the desirability indices by characteristics of the counties of the respondents.

As is the case in the higher risk areas, the acceptability indices are higher in the less affluent and more stable (or less growing) counties and they are lower in the more affluent and more dynamic counties of the nation.

Now, of course, it cannot be exactly clear what people in lower risk areas may be referring to: do they address desirability of crisis relocation assuming that they, too, might have to be relocated (and thus not knowing that they presumably reside in "safer" areas of the country)? Or do they, for that matter, recognize that they might come to be involved in crisis relocation chiefly as hosts for potential evacuees from riskier areas?

Since data on perceptions of living in a likely target area suggest that many people in the lower risk or safer counties also consider their areas to be subject to direct attacks, it would seem to indicate that there exists considerable confusion on this matter. In their present form, the data do not permit "clean" interpretation in terms of the issue posed above:

Table 66

## HIGHER AND LOWER RELOCATION POLICY ACCEPTABILITY INDICES IN TR-82 HIGH RISK AREAS

<u>Characteristic</u>	<u>Index</u>	<u>Characteristic</u>	<u>Index</u>
Very high population density	+1.33	High population density (5,000-10,000)	+0.77
Some loss due to outmigration	+1.42	High immigration (25 to 50 percent)	+0.92
Medium area urbanization (50-75 percent)	+1.64	Lower urbanization (below 50 percent)	+0.88
Medium percentage with high school or more education (45 to 55 percent)	+1.36	More than two-third with high school	+0.69
Many female-headed households	+1.38	Few female-headed households	+1.04
10 to 15 percent below poverty line	+1.60	Few (less than 5 percent) below poverty line	+0.71
Median income \$8,000 to \$10,000	+1.36	Median income over \$12,000	+0.68
Few owner occupied housing units	+1.72	About 45 to 55 owner occupancy	+0.86
Lower median value of owner occupied housing units	+1.24	Higher median value of owner occupied housing units	+0.94
Lower residential mobility	+1.28	Higher residential mobility	+1.08



Table 67

HIGHER AND LOWER INDICES OF ACCEPTABILITY OF RELOCATION POLICY IN LOWER RISK COUNTIES

<u>Characteristic</u>	<u>Index</u>	<u>Characteristic</u>	<u>Index</u>
Modest population growth (up to 10 percent)	+1.29	Higher population growth (25 percent or more)	+0.44
Some net immigration	+1.36	High immigration	+0.55
Low urbanization	+1.22	75 percent or more urbanized area	+0.49
High percent female-headed households	+1.34	Low percent female-headed households	+0.84
High percent below poverty line	+1.25	Low percent below poverty line	+0.60
Low median income	+1.26	Higher median income	+0.62
Low residential mobility	+1.22	High residential mobility	+0.49

whether the low risk area residents consider themselves as likely relocatees or as likely hosts and how many (and who) fall into the respective categories along these lines.

In any case, both in high risk and lower risk areas, crisis relocation policy is seen as a desirable one with an overall index value generally beyond the (+1) marker. If the scale were converted, by a simple transformation, into one with a range from 0 to 100 (instead of the current range from -3 to +3), this overall result represents a range of values between about 59 and 80 on such a scale, with an overall average of about 69.0.

To reiterate: a national strategy to relocate people from vulnerable areas finds rather high acceptability in the nation's body politic at least at the close of the 1970s--and from prior national data, also in years preceding the late 1978 survey.

## XXII. CRISIS RELOCATION: PLANS

Should there be crisis relocation plans? The previous sections of the report have already documented some relevant factors: there exists a genuine (perceived) threat of nuclear conflict; crisis relocation would significantly increase survivability prospects of our people--though less so than would (as perceived) either blast shelters or fallout shelters; most people do think that they live in high risk (targeted) areas--even those who, in terms of TR-82, do not; most people, by far, are convinced that there might exist circumstances under which the President would opt for crisis relocation even though most also feel that there would not be enough time in which to evacuate; and an evacuation/relocation policy as a national posture is seen as rather desirable.

Table 68 gives the evidence, in percentage terms, bearing on the fact that most of Americans are also convinced that it would prove quite prudent to develop, and have, crisis relocation plans.

Table 68  
CRISIS RELOCATION PLANNING

<u>Should have plans?</u>	<u>Index</u>
Definitely yes	46.5
Probably yes	31.7
Undecided, depends	10.0
Probably not	5.1
Definitely not	3.1
No answer/don't know	3.5

Thus only 8.2 percent of the respondents believed that--for whatever reasons (waste of money? time? ineffectiveness? increased war likelihood? and so on)--the nation ought either probably or definitely not engage in crisis relocation planning. The modal response, in fact, is that such plans ought to be "definitely" developed--with 46.5 percent of the respondents in this category.

On an index with a range of zero to 100 (an index resulting by the same kinds of simple transformations which had been previously outlined), the data show the following pattern of crisis relocation planning acceptability (Table 69):

Table 69

ACCEPTABILITY OF CRISIS RELOCATION PLANNING

	<u>Index</u>
Total sample	79.4
In TR-82 high risk areas	79.3
In other areas	79.7

It goes without saying that the basic index behaves in the same way regardless of TR-82 level of risk. Crisis relocation planning then has high acceptability for both those who reside in higher and in lower risk areas (in TR-82 terms).

An analysis of the data in terms of characteristics of the residential counties of the respondents only underscores the homogeneity of the key results: the indices range only between about 75.0 and 83.0--none falling below 70 and none exceeding 85, and this holds for both higher and lower risk area residents.

Only one "pattern," and a very moderate one, seems to emerge: the acceptability of crisis relocation is the higher the lower the average value of owner occupied housing units--both in TR-82 high risk and in other areas.

But in high risk areas, this amounts to a difference of only some 6 points on the index, and in lower risk areas, to a difference of some 4 points.

Therefore, two major conclusions can be easily reached since the data appear quite unequivocal in these regards:

- (1) Crisis relocation planning is highly acceptable.
- (2) The acceptability of crisis relocation planning does not vary as a function of TR-82 risk level, nor does it vary in terms of more detailed traits of the counties of the sampled respondents.

The concept of crisis relocation planning is then essentially altogether noncontroversial (even though some 8 percent or so of our people may not view it that way). This seems to be quite important especially in the light of the fact that survivability prospects are not believed to be particularly outstanding (with crisis relocation) and even though so many people, a large majority in fact, are convinced that there might not be enough time to relocate should the worst begin happening.

What this all says, of course, is about as follows: it is worth being prepared (a conclusion further buttressed by the relation between actual spending, perceived spending and desirable budgets for civil defense) even though such a system may fall far from perfection (the survivability data drive this aspect of the conclusion, of course) or even if crisis relocation were never to happen (the Presidential action data sustain this aspect of the conclusion). Without illusions (which might induce what some antagonists of civil defense refer to as "complacency" about nuclear war), there is support. The support is strong (for crisis relocation planning). And it is widespread regardless of the socioeconomic and demographic context in which our people live. It is nationwide.

### XXIII. CONCLUSIONS

Basically, the data reveal acceptability of crisis relocation as a national posture and an expressed need for plans to be able to implement crisis relocation should the necessity arise.

Differences in attitudes toward evacuation as a national policy are, on the whole, subtle ones. But they are, in effect, patterned: more rural and poorer areas of the country yield higher desirability indices than do the more well-to-do and highly urban counties.

By contrast, the acceptability of crisis relocation planning produces indices which are quite homogeneous regardless of the selected county characteristics. And the indices are all quite high.

For the most part then: a policy to evacuate (in "tense situations which might precede war," as the question stipulated) is an acceptable one, but less so than is the development of plans to have the capability to relocate.

It is as if the respondents were, on a strictly intuitive basis, saying that a policy to relocate may be a necessary one but the nation perhaps ought to have more flexibility, thereby not being locked to an evacuation posture as the sole option. The generating of plans to relocate, however, is clearly seen as a good idea across the country and gets "higher marks" as if the respondents were saying that the availability of such plans does not automatically mean that they would be, or would have to be, implemented. At the same time, the data on the possibility of a Presidential decision to urge crisis relocation (or order it, as the case may turn out to be eventually) show that the plans may, in fact, be carried out, while the information on warning time availability are indicative of uncertainties regarding the actual operational implementability of relocation.

In a sense then, it might be said that the data on warning time problems "link," at least conceptually, to the more robust notion of a policy to evacuate (which may prove unfeasible if viewed as a sole option), while the support for crisis relocation plans offers evidence of a linkage to the possibility that the President might actually opt for such an alternative in times of need.

Certainly one of the more pertinent policy issues has to do with the choice between an essentially high (or higher) profile campaign of education and information to, in effect, "sell" the public on the need for crisis relocation planning and a low (or lower) profile approach to take public support basically "for granted."

Here, the notion of "high profile" has to do with educational and informational campaign initiatives on the part of the Federal Emergency Management Agency (and of course, by appropriate regional, state, county and local officials as the case may be). The notion of "low profile" does not imply silence but rather responsiveness to questions emanating from the public, from the media and the like, but without deliberate initiatives to seek access to the media and the public in a promotional exercise.

The data lend support more to the lower than to the higher profile option: thus the basic public support can be taken for granted.

If this were so, the issue of education and information needs does not disappear: but rather than being couched in efforts to "sell" a program (or the program), it involves considering what information and knowledge might be of greatest preparedness value to the public and when, and how to best deliver such information and knowledge given that the basic program is an acceptable one.

Certainly another major matter of policy consideration arises in relation to decisions as to how much of an emphasis to place on crisis relocation as compared with other, essentially in-place, protection options--even if the latter were viewed strictly as a fallback system. This is less an issue in the domain of public education or information than one of allocation of limited human, technology and fiscal resources between complementary or even competing preparedness postures.

In a subtle but convincing way the data provide more support for a balanced effort, or a more balanced one, in preference to a mode in which one specific program, such as crisis relocation, ends up as almost the exclusive policy commitment.

And, in fact, there is even a more fundamental policy problem on hand: whether in-place protection systems are to be considered, by Government and our people, as fallback alternative(s) only or as potential postures of value in their own right.

This is important because the "in-place" configurations might be quite different depending on the extent to which the answer to such a starkly drawn policy alternative tilts one way or another. "Harder" in-place systems go better with postures in which non-relocation has its own significant survival value, while "softer" (such as the "best available fallout shelter") go better with the "fallback" notion in which non-relocation becomes the national preparedness posture by default rather than by design.

Throughout, of more than tangential importance here are deeper national security considerations to assess the degrees to which varying intensities of manifest commitment to crisis relocation (or, for that matter, to any single preparedness doctrine) provide variable signals to the Soviets, both as signals of opportunities to make potential use of on the one hand, and as signals of enhanced deterrence on the other hand.

The single most important lesson of the data, of course, is the one which merits repeating: basically, crisis relocation programs are quite acceptable to the nation's body politic.

What may happen with public sentiments in these regards over time and as crisis relocation planning proceeds is more difficult to speculate about. Here, there is some need to monitor the changing opinion climate. Yet, if history related to attitudes to other major civil defense programs, such as the Surveying, Marking and Stocking program, or the Home Basement Shelter survey activity and the like, are an appropriate lesson, which they undoubtedly are, even severe and widely publicized critiques of crisis relocation are unlikely to make much of a dent in the underlying supportive dispositions of the public.

Crisis relocation, as a principle, simply makes too much sense for people to dismiss: after all, it is altogether logical to respond to a massive threat (of any kind: including natural disasters or other major technological or man-made hazards) by either removing oneself from the place of danger (and this is, of course, what crisis relocation amounts to) or by interposing physical mass between oneself and the insult (which is what in-place protection in the way of sheltering is about).

All difficult policy choices pertaining to various aspects of crisis relocation thus can be conceptualized as occurring within a supportive climate of public sentiment.



PART F

WILLINGNESS TO RELOCATE

#### XXIV. INTRODUCTION

Statements of intentions regarding likely actions represent yet another important dimension of acceptability of a particular program. With respect to crisis relocation, it is easy to see that the range of possible intention claims may be one from complete stated unwillingness to evacuate to everyone's expressions about willingness to relocate (if needed).

When people say that they are likely, or even very likely, to evacuate under threatening circumstances, it does not follow that all will do so under real world conditions, or will feel to be in a position to do so. When, in turn, people express themselves less positively and assert that they are unlikely, or even very unlikely, to evacuate regardless of circumstances, it does not follow that they will, actually, carry out their "stayput" intention.

Data on claims regarding willingness or unwillingness to relocate thus cannot be construed to provide precise predictions of what would actually come about. But they do reflect current attitudes in the way of acceptability or non-acceptability of the notion of evacuation. And they do probably forecast actions within some, presently unknowable, range of error.

If anything, such outflows of people from high risk areas as might occur are likely to serve as a stimulus to evacuate even for those who may initially be unwilling, for whatever reasons, to do so. Thus if one were to speculate about the relation of the data to real world conditions, the most plausible speculation is one that argues that the data most probably underestimate, rather than overestimate some future reality.

In a crisis environment, indeed, the only "messages" likely to be most salient would be those encouraging relocation and hardly any incentives, or signals of incentives, would seem to prove important to discourage relocation.

Three items from the late 1978 inquiry are explicitly considered here. One has to do with spontaneous relocation, a movement away from riskier areas toward safer ones not triggered by Presidential recommendations or orders but affected by the flow of actual events as portrayed in the mass media and as interpreted by the nation's families. The item was as follows:

"Suppose there were a major international crisis and it seemed very likely that it might lead directly into a nuclear war. Would you (and your family) be inclined to evacuate your place of residence and go somewhere else under these circumstances?"

(Question 46, 1978 Instrument)

Here, the term "evacuation"--rather than "relocation"--is used quite deliberately. At the time of the research, in late 1978, the concept of "relocation" seemed to have little currency in public thinking. At the same time, there exists considerable familiarity with what "evacuation" means in face of experiences of a good number of Americans under natural and other disaster conditions, and in face of exposure of all Americans to news reports about this or that evacuation, small scale or large scale.

"Suppose that the President would urge evacuation or relocation of our people. Would you and your family leave your place of residence and evacuate under these circumstances, that is, after the President had announced such action?"

(Question 55, 1978 Instrument)

This was the second item of critical relevance to this section of the paper.

The item focusses on Presidential "urging." Thus it does not necessarily reveal what the exact response pattern might be if the question were asked in terms of a Presidential "order" (rather than strong recommendation only) and whether people would think such orders to be at all enforceable (apart from their thinking whether such "orders" would at all be appropriate--and thus the notion of less than voluntary "evacuation" acceptable).

The item also introduces explicitly the conceptual equivalence between evacuation and "relocation," a terminology used by choice again if only to introduce the notion to the particular respondents.

Both items were so structured as to facilitate responses on a verbal rating scale running from "definitely yes" to "definitely no" through "probably yes", "probably no," and "undecided, depends" as the 50-50 midpoint.

The third item of considerable interest for this segment of the paper has to do, in effect, with an admixture of planned relocation and spontaneous movement:

"If you chose to leave, would you follow instructions as to where to go or would you want to evacuate to a place of your own choice?"  
(Question 56, 1978 Instrument)

Thus even people who would be inclined to follow a Presidential recommendation or urging (an item which immediately preceded the one under consideration here) may be unwilling, or unable, to relocate in accordance with local plans and prefer to move "on their own" to some location of their own choice. That such actions would have the global, or aggregate, effect of compliance with a national crisis relocation posture seems obvious. That they would present complications in the process of relocation and upon relocation, too, seems self-evident.

What they represent "problems" for planners (of crisis relocation movement) is similarly not to be doubted. But these are issues to which the discussion turns in the CONCLUSIONS section of this paper (Chapter XXVIII herein).

## XXV. SPONTANEOUS EVACUATION

The data of Table 70 show that there exists a very strong inclination among the nation's households to consider evacuation in circumstances of acute international threat.

Table 70

### LIKELIHOOD OF SPONTANEOUS EVACUATION UNDER SEVERE CRISIS CONDITIONS

	<u>Percent</u>
Definitely yes	21.0
Probably yes	22.1
Undecided, depends	16.6
Probably not	24.7
Definitely not	10.8
No answer/don't know	3.8

Only 10.8 percent of the respondents claim that they would "definitely not" evacuate even under the conditions stipulated; 21.0 percent, by contrast, say that they would "definitely" do so. In all then, an impressive 43 percent or thereabouts lean toward spontaneous evacuation if the signals and cues from the evolving international arena seemed to point to an impending outbreak of (nuclear) war.

Likelihood indices, generated along the lines previously outlined, show that the propensity is about the same in higher TR-82 as well as in "safer" TR-82 areas of the nation. Table 71 gives the likelihood indices.

Table 71

### SPONTANEOUS EVACUATION LIKELIHOOD INDICES

	<u>Index</u>
Total sample	54.2
In high TR-82 risk areas	54.6
In lower risk areas	52.8

What the data show is this:

- (1) The spontaneous outflow likelihood hovers around the 50-50 marker--it is, indeed, very high.

- (2) This indicates that "preemptive" relocation (during a crisis period and prior to any Presidential action) is also quite credible (since in such a process, the individual families "control," so to say, the time of decision and thus to some extent the available "warning time").
- (3) There is hardly any difference in this regard between higher and lower risk areas.
- (4) This indicates that about as much outflow could be anticipated from areas that are "safer" by TR-82 standards as from the most likely target areas.
- (5) In turn, this amounts to saying that there exists a rather fundamental confusion throughout the nation as to which areas are most vulnerable and what are likely to be less, or least, vulnerable--a pattern of responses reproducing the basic results on perceptions of the public as to whether they do or do not live in a probable target area.

The respondents were also asked to estimate the percentage of people from their (otherwise undefined) area who might evacuate spontaneously. On balance, the average turns out to be 47.8 percent: thus the respondents say that about 50 percent of their "area" people would be inclined to evacuate; and the data on their own intentions reveal a similar result (with the index value somewhat higher than for the perceptions of the behavior of others).

Also, a question was asked about the likelihood of evacuating if people became aware of the fact that "the Russians began evacuating their cities and other unsafe areas." Here, the spontaneous evacuation likelihood is substantially lower than it is when the question was posed in relation to a generic severe international crisis.

Thus the respondents were saying, in effect, that Soviet evacuation in and of itself would not be necessarily the only clue, though it would prove to be an important one, that a crisis might be getting out of hand.

Unfortunately, no further probe was included in the 1978 study: for instance, to reveal "why" Soviet evacuation movement would not lead to an even higher propensity to relocate than the data show when the question is posed in terms of deteriorating international situation only; for instance, whether Soviet evacuation would be the key trigger for a

Presidential decision to urge relocation. The data on spontaneous evacuation in face of a similar antecedant action by the Soviets are not further analyzed here.

Nor is emphasis placed in this analysis on the, relatively many, people who appear to think about spontaneous evacuation as movement to "shelter." This is a problem indeed, but one that time itself will resolve as the concept of crisis relocation becomes as familiar to many Americans as the idea of (public/community) "fallout shelters" has become.

Also: there seems to be little need to address the data as they bear on the spontaneous evacuation proclivities of residents in the TR-82 "safer" areas: with information about high risk and lower risk areas, something that looms as an obvious outcome of crisis relocation planning itself, this "problem" also is likely to take care of itself so that tendencies to abandon safer areas are likely to diminish, if not disappear altogether, when it becomes clearer in the public domain which areas are "safer" and which ones are truly at high risk, at least under the premises of war-waging models on which TR-82 and suchlike documents are based and on which, after all, crisis relocation plans in some manner must rely.

It turns out that only few of the characteristics of the respective counties of the respondents yield important differences in the rates of intended spontaneous evacuation.

- (1) The fewer the percentage of residents with high school education or more, the higher the claims regarding spontaneous evacuation rates. In high risk counties with fewer than 33.3 percent of high school graduates, the rate is 57.6, while in counties with 66.7 percent or more of high school graduates, the rate amounts to 45.7 percent.
- (2) The lower the median family income, the higher the rate: in counties with income medians of less than \$8,000 per annum, the likelihood index is 58.6; it is, by contrast, 48.6 in counties with median incomes in excess of \$12,000 per year.
- (3) The lower the dollar value of owner occupied housing units, the higher the likely spontaneous evacuation rate: 57.7 in counties with dwelling unit values of

less than \$15,850 ( $10^{4.2}$ ); and 49.4 in counties where the value exceeds \$25,119.

- (4) The lower the local governments per capita expenditures, the higher the spontaneous evacuation index: it has (its highest) value of 62.7 in counties with \$150 or less annual per capita expenditures, and a lower value of 53.2 in counties where local government spending exceeds \$250 per year per person.
- (5) The lowest index value, 45.6, occurs in counties with very high owner occupancy of dwelling units; the highest value, 62.7, in counties with the lower annual per capita local government expenditures. But even the relatively lower spontaneous evacuation propensities yield high indices and none, as is obvious, fall below a value of 45. Thus between 4 and 6 out of 10 American households/families indicate a tendency to relocate, or seriously consider relocating, on their own under conditions of an acute international threat.

The key pattern, too, is a clear one: indices of spontaneous evacuation likelihood tend to be consistently higher--within the range as it exists--in counties that are less affluent than in the more affluent ones. Thus only socioeconomic status factors enter into the differentiation among the TR-82 counties when it comes to spontaneous relocation prospects.



## XXVI. DIRECTED RELOCATION

Clearly, as has been shown in Chapter XXV above, the potential spontaneous outflow of our people under deteriorating international conditions might be of rather massive proportions. Even if only those who said that they might "definitely" evacuate were considered, 21 percent as it turned out to be (Table 70); this is anything but a negligible number. If the likelihood measure (Table 71) for high risk areas is taken as yet another clue, its value of 54.6 is certainly a high one, if indeed not a surprisingly high one.

What then happens when the respondents are asked about their likelihood to relocate should the President "urge evacuation or relocation?"

In percentage terms of the basis research data, Table 72 provides the information.

Table 72

PERCENTAGES OF LIKELY AND UNLIKELY RELOCATEES  
(PRESIDENTIALLY URGED RELOCATION)

<u>Likelihood</u>	<u>Percent</u>
Definitely yes	31.9
Probably yes	38.3
Undecided, depends	15.2
Probably not	7.5
Definitely not	4.9
Don't know/no answer	2.3

Thus some 70 percent would "definitely" or "probably" relocate given a Presidential decision; and another 15.2 percent fall into the middle category of the scale.

A comparison of the data from Table 72 with Table 70 shows that some 10.9 percent more people would be inclined to definitely relocate (and thus comply with the President's recommendation) than would do so spontaneously. And another 16.2 percent would "probably" do so.

If this were to be the case, then directed evacuation of the Crisis Relocation Planning effort would make a significant, but relatively marginal, contribution to the outflow of people which is likely to have already taken place on a spontaneous basis.

In terms of likelihood indices, and in their relation to the indices of Table 71 (for spontaneous evacuation), the data of Table 73 yield further insight.

Table 73

LIKELIHOOD OF DIRECTED RELOCATION AND ITS  
RELATION TO SPONTANEOUS EVACUATION

	<u>Index</u>	<u>Difference index*</u>	<u>Ratio index*</u>
Total sample	71.7	+17.5	1.32
In high risk areas	71.8	+17.2	1.32
In lower risk areas	71.5	+18.7	1.35

\*Indices relative to data of Table 72

The response pattern then is just about the same, as it was for spontaneous evacuation, in both TR-82 high risk areas and in the lower risk areas of the country.

The overall "payoff" of directed relocation is of the order of 18 percent, representing a relocation outcome higher by a factor between 1.32 and 1.35 than spontaneous movement might have already attained.

Now obviously, the similarity of the data for respondents from counties regardless of risk level (in TR-82 terms) further points to the absence of public information as to what constitutes higher and lower risk areas.

Undoubtedly, one of the more direct effects of Crisis Relocation Planning in terms of public awareness is dissemination of information by which Americans would learn whether they are likely relocatees, hosts of relocatees, or neither (but living in lower risk areas).

With increasing information level, it is altogether safe to assume that both expressed intentions for spontaneous evacuation and for compliance with a Presidential decision in the lower risk areas would decline, if not altogether disappear.

In light of such considerations, more detailed attention--at least as of now--need not be paid to residents of lower risk areas. This is, to repeat, predicated on the notion that once they were to know that they are living in areas which the Department of Defense, by whatever methods, has delineated as unlikely direct target areas, such people would stay put rather than relocate, spontaneously or upon Presidential action.

Table 74

SELECTED GLOBAL CHARACTERISTICS OF COUNTRIES  
[RESPONSE TO PRESIDENTIALLY URGED RELOCATION: LIKELIHOOD INDEX  
OF DIFFERENCE AND RATIO INDICES BETWEEN PLANNED AND SPONTANEOUS EVACUATION]

<u>Characteristics</u>	<u>Relocatability Index</u>	<u>Difference Index</u>	<u>Ratio Index</u>
A. POPULATION DENSITY			
<= 100	67.6	+16.1	1.31
100 <= 1,000	73.1	+17.0	1.30
1,000 <= 5,000	72.7	+18.4	1.34
5,000 <= 10,000	60.4	+10.0	1.20
10,000 <	73.2	+18.0	1.33
B. TOTAL FARM ACREAGE			
Below average	72.0	+17.1	1.31
Above average	72.0	+17.3	1.32
C. PERCENT LAND IN FARMING			
Below average	72.0	+17.4	1.32
Above average	71.4	+17.0	1.32
D. PERCENT OF PRE-1950 HOUSING STRUCTURES			
Below average	72.2	+17.2	1.31
Above average	71.2	+17.1	1.32

Table 74 (continued)

Characteristics	Relocatability Index	Difference Index	Ratio Index
E. PERCENT OF POST-1960 HOUSING STRUCTURES			
Below average	71.4	+17.8	1.33
Above average	72.2	+16.2	1.29
F. PERCENT URBAN			
<= 25	68.8	+18.6	1.37
25 <= 50			
50 <= 75	75.3	+23.4	1.45
75 <= 100	72.3	+16.9	1.30
100 <	70.5	+16.1	1.29

Table 75

## SELECTED POPULATION COMPOSITION CHARACTERISTICS OF THE COUNTIES

Characteristics	Relocatability Index	Difference Index	Ratio Index
A. PERCENT MINORITY RESIDENTS			
25 =<	73.2	+16.3	1.29
15 <= 25	72.0	+15.3	1.27
5 <= 15	71.6	+18.9	1.36
5 >	70.5	+16.4	1.30
B. PERCENT UNDER 5 YEARS OF AGE			
Below average	71.3	+17.2	1.32
Above average	73.2	+17.0	1.30
C. PERCENT 65 YEARS AND OLDER			
Below average	72.2	+17.3	1.32
Above average	70.6	+16.8	1.31
D. PERCENT OWNER OCCUPANCY OF DWELLING UNITS			
<= 25	73.9	+21.2	1.40
25 <= 45	70.5	+21.7	1.44
45 <= 55	69.2	+16.9	1.32
55 <= 75	72.2	+15.4	1.27
75 <	72.7	+27.1	1.59

Table 76

## SELECTED POPULATION DYNAMICS OF THE COUNTIES

<u>Characteristics</u>	<u>Relocatability Index</u>	<u>Difference Index</u>	<u>Ratio Index</u>
<b>A. POPULATION GROWTH 1960-1970</b>			
<= 0	73.5	+17.1	1.30
0 <= 10	70.1	+16.0	1.30
10 <= 25	72.9	+18.6	1.34
25 <= 50	73.8	+18.2	1.33
50 <	65.7	+14.3	1.28
<b>B. NET MIGRATION 1960-1970</b>			
<= -10	73.2	+15.2	1.26
-10 <= 0	71.5	+16.3	1.30
0 <= 10	71.0	+18.8	1.36
10 <= 25	75.2	+18.5	1.33
25 <= 50	64.9	+15.3	1.31
50 <	73.4	+16.9	1.30
<b>C. PERCENT WHO MOVED TO CURRENT RESIDENCE 1960-1970</b>			
<= 40	73.6	+21.8	1.42
40 <= 50	72.1	+17.6	1.32
50 <= 60	70.7	+15.6	1.28
60 <	72.7	+17.5	1.32
<b>D. BIRTH RATE</b>			
Below average	71.3	+19.6	1.38
Above average	70.6	+14.9	1.26
<b>E. DEATH RATE</b>			
Below average	72.0	+17.6	1.32
Above average	71.3	+16.5	1.30

Table 77

## OCCUPATIONAL STRUCTURE CHARACTERISTICS OF THE COUNTIES

Characteristics	Relocatability Index	Difference Index	Ratio Index
A. PERCENT EMPLOYED IN MANUFACTURING			
Below average	72.2	+17.7	1.32
Above average	71.0	+16.3	1.30
B. PERCENT EMPLOYED IN WHOLESALE/RETAIL			
Below average	71.3	+18.6	1.35
Above average	71.9	+16.3	1.29
C. PERCENT EMPLOYED IN SERVICES			
Below average	71.1	+16.9	1.31
Above average	72.3	+17.4	1.32
D. PERCENT EMPLOYED IN EDUCATION			
Below average	71.6	+16.2	1.29
Above average	72.1	+19.6	1.37
E. PERCENT EMPLOYED IN CONSTRUCTION			
Below average	71.4	+17.0	1.31
Above average	74.0	+18.0	1.32
F. PERCENT POPULATION ON FARMS			
= 0	72.2	+17.7	1.32
0 <= 1	72.7	+16.1	1.28
1 <= 5	70.2	+14.7	1.26
5 <= 15			
15 <	67.4	+17.9	1.36

Table 78

## SOCIOECONOMIC STATUS CHARACTERISTICS OF COUNTIES

Characteristics	Relocatability Index	Difference Index	Ratio Index
A. PERCENT WITH HIGH SCHOOL EDUCATION OR MORE			
<= 33.3			
33.3 <= 45	72.5	+14.9	1.26
45 <= 55			
55 <= 66.7	72.9	+16.8	1.30
66.7 <	72.1	+18.1	1.34
	63.1	+17.4	1.38
B. PERCENT FAMILIES WITH FEMALE HEAD			
<= 7.5			
7.5 <= 10	69.1	+17.5	1.34
10 <= 12.5	71.8	+18.3	1.34
12.5 <= 15	73.3	+16.3	1.28
15 <	71.0	+14.4	1.25
	74.1	+19.0	1.34
C. PERCENT FAMILIES BELOW POVERTY LINE			
<= 5			
5 <= 10	70.1	+18.4	1.36
10 <= 15	71.3	+17.4	1.32
15 <	74.0	+15.2	1.26
	74.6	+16.7	1.29
D. MEDIAN INCOME			
<= \$ 8,000			
\$ 8,000 <= \$10,000	74.8	+16.2	1.28
\$10,000 <= \$12,000	73.4	+16.1	1.28
\$12,000 <	71.1	+17.1	1.32
	68.7	+20.1	1.41



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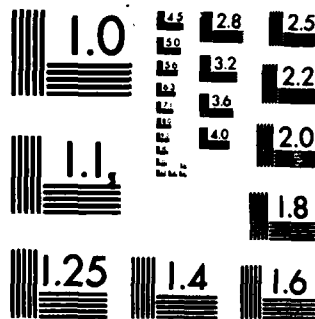
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MICROCOPY RESOLUTION TEST CHART  
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Table 78 (continued)

<u>Characteristics</u>	<u>Relocatability Index</u>	<u>Difference Index</u>	<u>Ratio Index</u>
E. MEDIAN DOLLAR VALUE OF OWNER OCCUPIED HOUSING UNITS ]			
<= \$10 <sup>4</sup> **	73.2	+15.5	1.27
\$10 <sup>4</sup> <= \$10 <sup>4.2</sup>			
\$10 <sup>4.2</sup> <= \$10 <sup>4.4</sup>	72.2	+17.6	1.32
\$10 <sup>4.4</sup> <	67.8	+18.4	1.37
F. AVERAGE 1969 VALUE OF FARM			
Below average	73.6	+17.2	1.30
Above average	70.4	+17.2	1.32
G. AVERAGE DOLLAR VALUE PER ACRE OF FARM LAND			
Below average	73.3	+17.7	1.32
Above average	67.8	+15.8	1.30
H. PER CAPITA LOCAL GOVERNMENT EXPENDITURES			
<= \$150	75.4	+12.7	1.20
\$150 <= \$200	71.8	+16.9	1.31
\$200 <= \$250	72.2	+17.4	1.32
\$250 <	70.8	+17.6	1.33

Tables 74 through 78 give detailed data by the various clusters of county characteristics along three lines: for one, the relocation likelihood indices on condition of a Presidential recommendation (or order, for that matter); second, the difference, in likelihood index terms between the magnitude of directed relocation and the (presumably) antecedant spontaneous evacuation; and, third, the ratio of the directed relocation index to the corresponding index associated with spontaneous evacuation.

As can be readily seen from Tables 74-78, the main result is of the following kind: the intentions to follow a Presidential recommendation to relocate are basically alike regardless of the characteristics of the counties in which the study respondents resided.

But there are some differences. The lowest relocatability index is 60.4--in counties with population densities between 5,000 to 10,000 per square mile; in these areas of the country, this also amounts to the lowest increment over spontaneous evacuation, and the ratio index, too, has its lowest value (of 1.2). By contrast, the index values are 73.2 and 73.1 respectively in counties with very high density (over 10,000 per square mile) and with low densities, 100 to 1,000 per square mile.

The highest relocatability index is yielded by respondents from counties that are around the midpoint of urbanization (50 to 75 percent; the index being 75.3) and, with a value of 75.2 in counties with a medium amount of net positive migration (10 to 25 percent over the period).

The higher the percentage of minority residents, the higher the relocatability indices: but the values range only between 70.5 (where there are fewer than 5 percent minority residents) to 73.2 (where there are 25 or more percent minority residents). The difference and ratio indices do not mirror this modest regularity: the payoff of directed over spontaneous relocation does not have a monotonic relation to the percentages of minority residents.

Yet three weaker regularities are noted in the relocatability indices. All have to do with differences among counties along socio-economic lines: the index is the higher the larger the percentage of families below poverty line (with a range between 70.1 and 74.6); it is also the higher the lower the median income--with values ranging between 68.7 (where incomes exceed \$12,000 as their median value) and 74.8 (where the median is at or below \$8,000 per year); and finally, the index of relocatability

is the higher the lower the value of owner occupied housing units (with index values of 73.2, 72.2 and 67.8 in that order related to ascending dollar values of the housing units).

In the latter case, the difference index, however, as well as the ratio index are the higher the higher the value of owner occupied dwellings. This, of course, suggests lower willingness to evacuate spontaneously initially, and even though relocatability in directed movement is the lower the higher the dollar values of housing, the "payoff" measures reflect higher increments in willingness to comply with a Presidential recommendation.

The same basic pattern, in terms of the comparison between the relocatability index as such as the difference and ratio measures, holds also with respect to median income: the difference between directed and spontaneous relocation is the higher the higher the median income, and the ratio index behaves much the same way. Even though the relocatability index falls below the value of 70 (it is, in fact, 68.7) for residents of counties with median income in excess of \$12,000 per year, this also amounts to an increment of 20.1 over spontaneous evacuation--the ratio being 1.41.

In general then, the difference indices--indicative of increment in relocation resulting from directed rather than spontaneous movement--range from the low of +10.0 in high density areas (of 5,000 to 10,000 per square mile) to the high of 27.1 among residents in counties with very high owner occupancy of dwelling units.

The ratio indices, in turn, have their lowest value at 1.20: in counties, once again, with high population densities but also in counties with the (relatively) lowest local government per capita expenditures. But the two patterns differ in the more fundamental sense: as has been pointed out, in the high density counties, the difference index is also very low, and the relocatability index, too, is the lowest one (60.4). In the counties with low government per person expenditures, the difference index is also among the lowest (+12.7), but relocatability is relatively high--75.4, one of the highest values in the whole set.

Thus in the former types of counties (high density), fewer than the average would move out spontaneously, and directed relocation would also yield the smallest relative increment in the resulting relocation outcome. In the latter counties (with very low per capita local government spending),

the spontaneous relocation reaches high values to begin with--and directed relocation makes a relatively small difference though the overall outcome amounts to high relocatability.

In counties characterized by median urbanization (50 to 75 percent urbanized), the difference and ratio indices are high (+23.4 and 1.45 respectively); and relocatability as the overall outcome, too, is high with an index value of 75.3. Thus quite a few people here might tend to move spontaneously, but relatively many more would abide by a Presidential recommendation so that the result produces high relocatability.

By contrast, counties with the highest median income (over \$12,000 per year), Presidential action would make an important difference (+20.1), and the ratio of directed to spontaneous relocation is, as has been already mentioned in a different context above, at a high of 1.41. But the relocatability index is a relatively low 68.7. Thus fewer people intend to move out spontaneously than from areas with other characteristics, and even the relatively large increment due to possible Presidential action does not yield a relocation outcome at, or even above, the national average.

In counties with low per capita income (\$8,000 per year or less), high relocatability tends to result (at its 75.4 index level) mainly from spontaneous movement: the increments due to directed relocation are small, the difference index being but 12.7, and the ratio index of 1.20.

Four main patterns are of interest. These may be now summarized along with identification of counties which typify each pattern more clearly.

Pattern I. High relocatability. High increment due to directed relocation over spontaneous movement which itself, of necessity, tends to be somewhat lower. Typical are counties that are 50-75 percent urbanized, such as:

Tom Green, Texas  
Morgan, Colorado  
Monterey, California  
Will, Illinois  
Worcester, Massachusetts  
Erie, Pennsylvania  
Westmoreland, Pennsylvania  
Northampton, Pennsylvania  
Salem, New Jersey  
Gloucester, New Jersey  
Portage, Ohio  
Trumbull, Ohio  
Anne Arundel, Maryland

Pattern II. High relocatability. Low increment due to directed relocation, thus indicative of high spontaneous outflows to which subsequent directed relocation makes but a modest contribution. Typical are counties with low local government annual per capita expenditures:

Johnson, Missouri  
St. Claire, Missouri  
Cumberland, North Carolina  
Davidson, North Carolina  
Sumter, South Carolina  
Pulaski, Arkansas

Pattern III. Relatively low relocatability. High increments due to possible Presidential action. But this also implies low spontaneous movement compared with other types of counties, and even directed relocation does not result in an outcome anticipatable elsewhere. Typical here are counties with high annual family incomes, such as:

Suffolk, New York  
Nassau, New York  
Westchester, New York  
Jefferson, Colorado  
Arapahoe, Colorado  
Contra Costa, California  
San Mateo, California  
Lake, Illinois  
Du Page, Illinois  
Fairfax, Virginia  
Prince Georges, Maryland  
Montgomery, Maryland  
Baltimore, Maryland  
Norfolk, Massachusetts  
St. Louis, Missouri  
Fairfield, Connecticut  
Bergen, New Jersey  
Montgomery, Pennsylvania

Pattern IV. Low relocatability. Low increments to spontaneous outflow, which is relatively low to begin with, of Presidential action. Typical of this pattern are counties with high, but not highest, population densities:

Cook, Illinois  
Essex, New Jersey  
Union, New Jersey  
Richmond, New York  
Arlington, Virginia  
Denver, Colorado

Yet, pointing out differences such as these must not obscure the main point: the differences between higher and lower relocatabilities are rarely massive ones. The indices never fall below 60.0; nor do they exceed a value of 80.0 (and only two, in fact, exceed the value of 75.0).

Similarly, the spontaneous evacuation measures, discussed in Chapter XXV above also display much more homogeneity than heterogeneity regardless of characteristics of the counties in which the respondents resided at the time of the inquiry. Hence, as the data of Tables 74-78 amply demonstrate, the increments in relocation due to Presidential urging are also predominantly quite homogeneous although some of the more relevant differences have been identified in the course of the previous analysis.



## XXVII. COMPLIANCE WITH RELOCATION PLANS

At least two major "tiers" of compliant action may be distinguished for the purposes of this analysis. For one, "compliance" means that people would actually relocate should the President urge such action. Second, "compliance" may also mean that people would follow the national, though localized, relocation plans rather than "do it on their own."

Certainly nothing can be said about what would actually happen. The data of Chapter XXVI above are indicative of ex ante willingness to comply with a relocation recommendation. The data considered here concern the willingness to, or preference for, compliance with relocation plans.

People who say that they would, if relocating, prefer, or be willing, to "follow instructions" rather than make choices as to where to relocate on their own are expressing this particular willingness to follow national plans, that is, "compliance" in the second tier-like meaning of the term.

Now sometimes, the notion of "compliance" is used in a somewhat negative manner: as if it were to designate "sheeplike" action, willingness to "follow leaders" and suchlike characteristics short of autonomous behavior. This, by no means, is the implication here nor can it be: "compliance" with rationally developed national plans, in their localized applicability, amounts to the most rational response for most people: the work of thinking through what to do and when in an emergency has been done for them, and on their behalf, by experts and it is certainly generally prudent, under crisis conditions, to avail oneself of such expert advice--and to follow it. It is, indeed, not unlike following recommendations of one's physician: few would view "compliance" with a doctor's recommendations as evidence of lacking individuation or autonomy.

In any event, what do people say about their willingness or preference to abide by instructions where to relocate, if they were to relocate at all, as contrasted for a preference to make such choices on one's own? The latter choice, of course, may often be an altogether rational one as well: people who have specific safer places to go to (their own camping sites, summer cottages, friends and relatives and the like) may well be convinced that such decisions would be preferable over abidance by whatever national/local plans. Clearly, there would be nothing non-rational about many high

risk area families seeking refuge in safer areas where they have such facilities or where they may be certain to be welcome.

Table 79 gives the percentages of respondents inclined to follow instructions rather than "go it alone."

Table 79

PEOPLE PREFERRING TO FOLLOW  
RELOCATION INSTRUCTIONS

	<u>Percent</u>
Total sample	69.1
In TR-82 high risk areas	69.4
In lower risk areas	68.0

Thus by far most Americans say that they would tend to follow relocation instructions. Nor is there a difference in this regard, once again, between those who live in higher risk areas and those in relatively safer parts of the country.

Since people in lower risk areas would not be expected, or asked, to relocate anyway, more detailed consideration is needed only with respect to the data as it bears on statements of high risk area residents. Indeed, if there were any messages relevant to the issue directed at the residents of lower risk areas, they would likely be messages not to relocate. No data are available on the responsiveness of lower risk area residents to possible communications not to move out--something that might be of interest for those otherwise considering to evacuate (spontaneously) or relocate (on Presidential recommendation).

For most characteristics of the respective counties of residence (of the respondents), the intentions to follow instructions yield homogeneous indices. But there are some differences of considerable interest.

- (a) In counties that are altogether urbanized, the willingness to follow instruction has an index value of 40.0 (the lowest of all values across county characteristics). In counties which are about 50-75 percent urbanized (typical examples of which are shown in Chapter XXVI above under Pattern I concerning relocatability/spontaneous relocation relations), the index is 75.7 percent.

- (b) In counties with more than 66.7 percent of residents (in appropriate age groups) with high school or higher education, the index is a low of 53.8; where fewer than 33.3 percent completed high school education, the index reaches a value of 75.8. In fact, the higher the percentage of more formally educated residents, the lower the expressed willingness to follow instructions regarding relocation rather than "going it alone."
- (c) The higher the percentage of minority group residents, the higher the willingness to follow national/local relocation plans--the index spread goes from 77.2 (for counties with more than 25 percent minority residents) to 66.6 (for counties with fewer than 1 percent of minority residents).
- (d) The index value are higher in areas with negative, or low positive, population growth than in the higher growth areas.
- (e) The lower the net migration, the higher the willingness to abide by instructions, though in counties with the highest net migration (50 percent or more), the index (67.4) exceeds the corresponding measure in counties with net migration of 25 to 50 percent (the index being 60.2); but it is 79.9 in counties that have been losing population due to migration.
- (f) In counties with low owner occupancy of dwelling units (25 percent or less), the willingness to accept instructions where to relocate amounts to a high of 82.8. In counties with about 45-55 owner occupancy, the low value of 62.3 shows up.
- (g) The higher the value of owner occupied housing units, the lower the likelihood of following instructions rather than going to some safer area of "one's own choosing." But here, the regularity of the pattern masks the fact that the difference among the extremes is a relatively small one: 66.5 in areas with the highest dollar values of housing, and 73.2 in areas with the lower housing worth.

Hence, factors bearing on population composition, some of the global characteristics of the counties (level of urbanization in particular, though densities, too, show differences if more subtle ones), some aspects

of population dynamics (population growth, net migration), and socio-economic variables (education, value of home ownership, owner occupied dwellings) enter into the key differentiations.

In growing, more well-to-do communities with more formally educated people, there is a stronger tendency to prefer to relocate, if at all, on one's own and to a place of one's own choosing. In more stable, if not declining, less affluent communities with few formally educated people, there is a strong tendency to express preferences for following such relocation instructions as may be provided.

Overall, of course, most of the data hover around the national average regardless of county characteristics: but there is also a major spread noticeable, from 40.0 percent (in 100 percent urbanized areas) to 82.8 percent (in counties with very few owner occupied dwelling units).

But, of course, the counties with few owner occupied dwelling units may also be the most urbanized ones. This does happen, indeed.

In fact, Kings County, New York County, and the Bronx County of New York exemplify the pattern. Here, the owner occupancy factor, however dominates: willingness to follow instructions is high on condition that people would be relocating.

By contrast, other completely urbanized areas in the study do not generally have such low owner occupancy patterns, and the low willingness to follow instructions characteristic of such entirely urbanized complexes is the typical norm: Philadelphia, Pennsylvania; Baltimore City, Maryland; Arlington, Virginia; Union County, New Jersey; San Francisco, California are the main examples.

The differences in these respects, some of them quite robust as has been seen, signify that problems associated with directed relocation might be rather different ones in areas with varying characteristics: in some, by far most people seem inclined to abide by relocation recommendations of appropriate officials; in others, the majority or near majority voices a preference for choosing places to relocate to perhaps different from and possibly even at odds with, relocation plans.

## XXVIII. SPONTANEOUS EVACUATION RECONSIDERED

Since possible spontaneous evacuation of people from high risk areas, not to speak of possible outflow of people from lower risk areas (as has been documented), would have important bearing on crisis relocation planning, and even more so on crisis relocation operations themselves, some further analysis is warranted.

To what extent, indeed, do the intentions to leave one's residential area under sharply deteriorating international conditions amount to evacuation that is to be considered adaptive? In other words: to what extent is there an understanding that spontaneous evacuation to be responsive to the survival needs of people must involve movement to safer areas and at some (even considerable) distance away? The respondents were, indeed, asked where they might go should they choose to evacuate. And they were also asked how far--in approximate miles--such an evacuation location would be from their place of residence.

Now these questions were not asked of those who said that they would probably not evacuate spontaneously and also not of those who said they would definitely not evacuate.

In turn, those who would, by their own claims, "definitely" or "probably" evacuate, and those responses were of the 50-50 variety were viewed as "likely" or "potential" spontaneous evacuees.

Operationally, such spontaneous movement was considered adaptive if the respondents said that they would go (a) to an area defined "safer" in terms of TR-82, to summer cottage, camp and the like, to friends and relatives; (b) at least 50 miles distant from their place of residence.

Adaptive were also responses of those who said they did not know where they might go to, but said they would be at least 50 miles away from their current high risk area residence. Likewise adaptive were the responses of those who said they would seek "shelter"--but at least 50 miles away; and finally, classified as adaptive were also those respondents who would clearly go to a "safer" area but were unsure about the actual distance and thus gave no mileage estimate.

All other responses among those otherwise inclined to spontaneously evacuate were defined as "maladaptive" from the vantage point of survival prospects: people who might go to friends, relatives, camping ground

summer cottages but not beyond the delineated 50 mile radius; those who didn't know where they might go but it was not beyond the 50 mile marker; those who would go from an "unsafe" to another "unsafe" area regardless of distance (say, to another city).

Table 80 provides a summary of these overall patterns.

Table 80

DISTRIBUTION OF RESPONDENTS IN HIGH RISK AREAS BY  
ADAPTIVE AND MALADAPTIVE EVACUATION INTENTION

	<u>Percent of Sample</u>	<u>Percent of Those Likely To Evacuate Only</u>	<u>Number of Respondents</u>
All in TR-82 high risk areas	61.9	---	1,253
Unlikely to evacuate	38.1	---	477
Adaptive spontaneous evacuation	27.9	45.1	350
Safer location at least 50 miles away	19.3	31.2	242
Safer location, unsure of distance	6.9	11.2	87
Shelter but more than 50 miles away	1.1	1.8	14
Unsure of location but more than 50 miles away	0.6	0.9	7
Maladaptive spontaneous evacuation	34.0	54.9	426

In all then, while some 62 percent claim some likelihood (50-50 or better) of spontaneous relocation, only about half of that movement (45.1 percent) represents adaptive measures in the sense previously defined.

For the sample as a whole, this means that 38.1 percent of the respondents are disinclined to leave spontaneously, and another 34.0 percent might leave but to locations and/or at distances which would not prove in keeping with a response adaptive to the concept which undergird crisis relocation doctrines.

Yet, even the definitely adaptive outflows amount to just about 30 percent of all respondents, with the adaptive response likely to increase sharply with better information about the very meaning of "crisis relocation," something triggered as a by-product of such planning itself and/or of actual efforts to enhance public understanding in the way of information or education efforts.

Four important pieces of information, by specific characteristics of the respective counties of respondent residence, are given in Tables 81-85.

Numbers of respondents (last column of the tabulations) represent the benchmark information. The percent unlikely to leave spontaneously can be easily obtained since it represents the complement of the percentage given under the (third) column showing percentages of those with 50-50 or higher spontaneous evacuation chances: thus, for instance, the 64.8 percentage in the lowest population density counties of TR-82 high risk areas implies that 35.2 percent in such counties would be unlikely to move out spontaneously, and so on.

Two percentages are given under "percent adaptive." The first percentage represents the relative adaptive movement among those likely to evacuate to begin with.

Thus, pursuing the lowest density example (of Table 81), the 22.8 percent means that 77.2 percent of those likely to evacuate such high risk low density areas would not move out adaptively.

In turn, the percentage in parentheses represents the adaptive evacuation rate for the sample as a whole--that is, for all those (as identified by absolute numbers in the last column of the tabulations) who resided in TR-82 high risk areas and in counties with the delineated characteristic. In the low density example, this means that 14.8 percent of the 108 residents of such areas would be adaptive in their intent to evacuate spontaneously.

The numbers in parentheses then represent the estimated adaptive spontaneous outflow of our people from high risk areas under the current state of knowledge and information regarding risk areas and regarding the meaning of "evacuation" or, better yet, "relocation."

Table 81

PATTERNS OF SPONTANEOUS EVACUATION  
(GLOBAL CHARACTERISTICS OF COUNTIES)

Characteristics	Percent Adaptive*	High Risk Areas		Number of Respondents
		Percent Likely to Evacuate**		
A. POPULATION DENSITY				
<= 100	22.8 (14.8)	64.8	108	
100 <= 1,000	41.9 (27.2)	65.0	495	
1,000 <= 5,000	53.8 (32.9)	61.1	453	
5,000 <=10,000	52.6 (29.8)	56.7	67	
10,000 <	43.5 (23.1)	53.1	130	
B. TOTAL FARM ACREAGE				
Below average	44.8 (28.5)	63.7	663	
Above average	45.6 (28.1)	61.6	466	
C. PERCENT LAND IN FARMING				
Below average	46.4 (28.7)	61.9	745	
Above average	45.1 (28.4)	63.0	338	
D. PERCENT OF PRE-1950 HOUSING STRUCTURES				
Below average	45.4 (28.6)	63.1	653	
Above average	44.8 (27.2)	60.7	600	



Table 81 (continued)

<u>Characteristics</u>	<u>Percent Adaptive*</u>	<u>High Risk Areas</u>	
		<u>Percent Likely to Evacuate**</u>	<u>Number of Respondents</u>
E. PERCENT OF POST-1960 HOUSING STRUCTURES			
Below average	49.6 (28.2)	56.8	720
Above average	46.4 (30.4)	65.6	483
F. PERCENT URBAN			
0	26.4 (15.0)	57.0	93
0 <= 25			
25 <= 50	35.4 (21.8)	61.5	78
50 <= 75	47.5 (30.3)	63.8	905
75 < 100	45.9 (25.4)	55.4	177
100			

\*Percentage of adaptive spontaneous movement among those likely to evacuate. In parenthesis, (), percentage of such adaptive spontaneous movement among all residents of the particular type of high risk area.

\*\*Those who said they would "definitely" or "probably" leave under conditions of worsening international crisis as well as those who fell into the 50-50 bracket on likelihood of spontaneous evacuation.

Table 82

PATTERNS OF SPONTANEOUS EVACUATION  
(POPULATION COMPOSITION CHARACTERISTICS OF COUNTIES)

Characteristics	Percent Adaptive	High Risk Areas		Number of Respondents
		Percent Likely to Evacuate		
A. PERCENT MINORITY RESIDENTS				
25 =<	36.7 (22.6)	61.5		208
15 <= 25	46.1 (29.4)	63.7		303
5 <= 15	44.8 (27.6)	61.7		488
5 >	50.0 (31.1)	62.2		254
B. PERCENT UNDER 5 YEARS OF AGE				
Below average	46.1 (28.1)	61.0		979
Above average	41.9 (27.4)	65.3		274
C. PERCENT 65 YEARS AND OLDER				
Below average	46.0 (28.5)	62.0		838
Above average	43.4 (26.8)	61.7		415
D. PERCENT OWNER OCCUPANCY OF DWELLING UNITS				
<= 25	41.1 (19.4)	47.2		72
25 <= 45	51.2 (31.8)	62.1		66
45 <= 55	55.0 (32.4)	59.0		222
55 <= 75	43.6 (28.4)	65.1		799
75 <	35.4 (18.5)	52.2		92

Table 83

PATTERNS OF ADAPTIVE SPONTANEOUS EVACUATION  
(POPULATION DYNAMICS CHARACTERISTICS OF COUNTIES)

<u>Characteristics</u>	<u>Percent Adaptive</u>	<u>High Risk Areas</u>		<u>Number of Respondents</u>
		<u>Percent Likely to Evacuate</u>		
<b>A. POPULATION GROWTH 1960-1970</b>				
<= 0	42.5 (24.2)	56.9		153
0 <= 10	37.5 (23.6)	62.8		368
10 <= 25	49.5 (30.4)	61.4		339
25 <= 50	48.6 (31.4)	64.7		283
50 <	50.7 (30.9)	60.9		110
<b>B. NET MIGRATION 1960-1970</b>				
<= -10	35.6 (21.8)	61.1		170
-10 <= 0	39.0 (25.0)	64.0		328
0 <= 10	49.7 (29.5)	59.4		315
10 <= 25	50.6 (32.4)	64.0		272
25 <= 50	40.8 (23.7)	58.2		122
50 <	70.0 (45.6)	65.2		46
<b>C. PERCENT WHO MOVED TO CURRENT RESIDENCE 1960-1970</b>				
<= 40	23.3 (13.7)	58.8		51
40 <= 50	43.8 (26.4)	60.4		495
50 <= 60	41.4 (26.7)	64.6		404
60 <	62.6 (38.4)	61.4		303
<b>D. BIRTH RATE</b>				
Below average	49.6 (29.0)	58.5		593
Above average	41.5 (27.0)	65.0		660
<b>E. DEATH RATE</b>				
Below average	46.8 (29.3)	62.6		805
Above average	41.9 (25.4)	60.7		448

Table 84  
PATTERNS OF SPONTANEOUS EVACUATION  
(OCCUPATIONAL STRUCTURE CHARACTERISTICS OF COUNTIES)

Characteristics	Percent Adaptive	High Risk Areas		Number of Respondents
		Percent Likely to Evacuate		
A. PERCENT EMPLOYED IN MANUFACTURING				
Below average	46.2 (28.5)	61.7		763
Above average	41.6 (25.9)	62.2		490
B. PERCENT EMPLOYED IN WHOLESALE/RETAIL				
Below average	39.9 (23.7)	59.5		425
Above average	47.6 (30.1)	63.2		828
C. PERCENT EMPLOYED IN SERVICES				
Below average	45.3 (28.4)	62.8		623
Above average	44.4 (27.1)	61.1		630
D. PERCENT EMPLOYED IN EDUCATION				
Below average	44.6 (28.0)	62.8		885
Above average	46.8 (28.0)	59.8		368
E. PERCENT EMPLOYED IN CONSTRUCTION				
Below average	45.9 (28.2)	61.4		1,123
Above average	38.4 (25.4)	66.2		130
F. PERCENT POPULATION ON FARMS				
= 0	47.8 (29.0)	60.7		924
0 <= 1	44.2 (30.1)	68.2		126
1 <= 5	36.7 (24.1)	65.7		137
5 <= 15	28.2 (16.7)	59.1		66
15 <				

Table 85

PATTERNS OF SPONTANEOUS EVACUATION  
(SOCIOECONOMIC CHARACTERISTICS OF COUNTIES)

Characteristics	High Risk Areas		Number of Respondents
	Percent Adaptive	Percent Likely to Evacuate	
A. PERCENT WITH HIGH SCHOOL EDUCATION OR MORE			
<= 33.3	31.2 (18.9)	60.6	127
33.3 <= 45			
45 <= 55	40.2 (25.7)	64.0	528
55 <= 66.7	50.5 (31.3)	62.0	495
66.7 <	64.8 (34.0)	52.4	103
B. PERCENT FAMILIES WITH FEMALE HEAD			
<= 7.5	43.2 (26.6)	61.7	214
7.5 <= 10	47.7 (29.2)	61.2	428
10 <= 12.5	45.2 (30.9)	68.3	243
12.5 <= 15	41.6 (25.4)	61.2	224
15 <	44.3 (24.3)	54.9	144
C. PERCENT FAMILIES BELOW POVERTY LINE			
<= 5	56.9 (33.0)	58.0	224
5 <= 10	46.7 (29.1)	62.4	745
10 <= 15	31.0 (19.5)	62.8	231
15 <	30.6 (20.8)	67.9	53
D. MEDIAN INCOME			
<= \$ 8,000	27.9 (19.4)	69.4	98
\$ 8,000 <= \$10,000	37.9 (24.3)	64.1	354
\$10,000 <= \$12,000	47.5 (29.3)	61.6	615
\$12,000 <	63.7 (35.0)	54.8	186

Table 85 (continued)

<u>Characteristics</u>	<u>Percent Adaptive</u>	<u>Percent Likely to Evacuate</u>	<u>Number of Respondents</u>
E. MEDIAN DOLLAR VALUE OF OWNER OCCUPIED HOUSING UNITS			
<= \$10 <sup>4</sup> **	34.4 (23.1)	67.2	338
\$10 <sup>4</sup> <= \$10 <sup>4.2</sup>			
\$10 <sup>4.2</sup> <= \$10 <sup>4.4</sup>	51.2 (31.9)	62.4	679
\$10 <sup>4.4</sup> <	60.0 (31.8)	53.0	236
F. AVERAGE 1969 VALUE OF FARM			
Below average	39.5 (26.0)	65.9	507
Above average	49.9 (30.0)	60.2	636
G. AVERAGE DOLLAR VALUE PER ACRE OF FARM LAND			
Below average	41.8 (26.9)	64.4	820
Above average	54.0 (31.6)	58.5	323
H. PER CAPITA LOCAL GOVERNMENT EXPENDITURES			
<= \$150	28.3 (20.0)	70.8	65
\$150 <= \$200	33.9 (22.7)	66.9	251
\$200 <= \$250	46.4 (29.6)	63.8	409
\$250 <	52.8 (30.1)	57.0	528

Some of the differences in Tables 81 through 85 are quite sharp. They are also patterned, at least in several important instances. But socioeconomic characteristics of the counties clearly account for many of the more robust, and patterned, differences:

- (a) The higher the percentage of residents with high school or more formal education, the higher the rate of adaptive spontaneous relocation.
- (b) The higher the percentage of families below the poverty line, the lower the general percentage of adaptive evacuation (but the higher the intended outflow of evacuees).
- (c) The higher the median family income, the higher the adaptive evacuation (but the lower the overall outflow of evacuees).
- (d) The higher the value of owner occupied dwelling units, the higher the spontaneous adaptive outflow of people (but again: the lower the overall rate of evacuation).
- (e) The higher the local government's per capita expenditures, the higher the adaptive spontaneous evacuation--and, once more, the lower the overall outflow of people.
- (f) Higher average dollar values of farms and higher values of farm land per acre induce higher adaptive spontaneous relocation--though lower overall intentions to so evacuate.

In a similar vein, some of the population dynamics traits of the counties produce relevant differences:

- (a) Negative growth and low growth counties in terms of population are characterized by adaptive movement which is substantially lower than that of higher growth areas.
- (b) The higher the percentage of residents who moved into their housing unit more recently, the higher the adaptive spontaneous evacuation.

A somewhat different view of the data yields additional insights:

- (a) In very low population density areas, adaptive evacuation amounts to only 22.8 percent of those likely to evacuate--14.8 percent of the sample; in medium density high risk areas (with 1,000 to 5,000 residents per square mile), the

corresponding percentages amount to 53.8 and 32.9--a difference of 29.0 and 18.1 percent respectively.

- (b) In least urbanized high risk counties, the overall (sample-based) rate of adaptive spontaneous evacuation is of the order of 15.0 percent; but it is 30.3 percent in highly, though not entirely, urbanized areas.
- (c) Where there are very few or very many owners occupying housing units, the adaptive outflow, relative to total sample base, comes to 19.4 and 18.5 percent respectively; in areas with 25 to 45 and 45 to 55 percent owner occupancy, the corresponding percentages turn out to be 31.8 and 32.4 percent respectively.
- (d) If only 23.3 percent and 13.7 percent are likely to evacuate adaptively (the first percentage of those likely to evacuate, the latter in the sample as a whole) in areas with low residential mobility, the parallel percentages are 62.6 and 38.4 in high mobility areas.
- (e) With many residents living on farms, the two percentages come to 28.2 percent (of likely evacuees) and 16.7 percent (of all such residents); but in areas with essentially zero people living on farms, the corresponding numbers are 47.8 and 29.0 percent.

If there is a basic lesson which permeates the data, it is of the following kind: intentions to evacuate spontaneously tend to be more associated with less dynamic and less affluent areas of the country; adaptive evacuation response, however, is more characteristic of more affluent and dynamic areas.

Adaptiveness of the intention--that is, carrying it in a manner which has the best chance, such as the chance may be anyway, to enhance survival prospects is thus clearly related more to the state of knowledge and information (which certainly can be presumed to be higher in the more affluent areas) than to an attitude expressed as a preference to evacuate if need be.

Even so, and discounting maladaptive movement, the outflow of our people from high risk areas on a spontaneous basis even under the current state of information (or, better yet, inadequate information) remains rather massive.



The maladaptive outflow potential is even larger--generally more than half of all those who would spontaneously evacuate, and sometimes even some three quarters of them.

All this certainly presents some problems for crisis relocation thinking and planning, a matter which needs to be taken up in the chapter on Conclusions which follows.

## XXIX. CONCLUSIONS

It is, indeed, relatively easy to summarize the main conclusions of the preceding Part of the analysis.

- (1) High levels of spontaneous evacuation might be anticipated regardless of the characteristics of the various subareas (counties) of the country.
- (2) Outflows of people, in this spontaneous and crisis-triggered manner, are consistently higher in areas which rate lower on socioeconomic status indices than in areas which are, in these terms, more affluent.
- (3) A good deal of spontaneous evacuation, however, would turn out to be maladaptive under current conditions of public knowledge and information:
  - (a) People in high risk areas saying that they would essentially "evacuate" to shelter--thus revealing some misunderstanding of the difference between movement to the best available nearby shelter and the principles which underlie crisis relocation thinking.
  - (b) Some people in high risk areas seem to plan to relocate to other high risk areas, though not many.
  - (c) People in lower risk areas intend to relocate on their own at rates very much like for those in high risk areas--yet, crisis relocation planning would certainly be based on the notion that people in low risk areas do not evacuate.
  - (d) Some may end up in other low risk areas.
  - (e) Some, in turn, may abandon lower risk areas and turn up in high risk areas.
- (4) A Presidential recommendation to relocate would increase the outflows of people by a factor around 1.32: if this were so, then the data suggest that spontaneous movement would accomplish roughly two-thirds of all eventual relocation and thus directed relocation might be, as asserted here with some trepidation, more marginal than central to the process.

- (5) In areas less inclined to spontaneous evacuation (more affluent counties; higher growth areas), the effect of a Presidential decision would prove to be the greatest: the increment in relocatability would generally be the highest, even though the ultimate outcome in such areas may yield higher aggregate stayput rates than in areas with initially high spontaneous evacuation but lower incremental relocation in the wake of a Presidential action.
- (6) Some 7 out of 10 would be inclined to follow relocation instructions--and thus national-localized plans--rather than attempt to decide on their own where to relocate.
- (7) The inclination to follow instruction is again higher in less affluent, more stable counties than it is in more affluent high growth areas of the nation. Here, some of the differences are quite robust.

Now altogether crucial policy matters arise out of the consideration of such data as presented, and documented, here.

The potentially very large rate of spontaneous evacuation drives a major policy problem. How sensitive might crisis relocation plans be to varying postulatable rates of prior spontaneous outflow of people from high risk areas? Over what ranges would the plans remain unaffected, and beyond what thresholds would the anticipated spontaneous movement begin to make important, if not dramatic, differences in the planning conceptualization and in the plan outcome? Should, therefore, CRP assume essentially the need to make more detailed relocation provisions for all (100 percent) residents of high risk areas or, perhaps, discount likely stayputs (say, 12 percent) as well as some important fragment of those now claiming that they would evacuate spontaneously and thus not wait for Presidential action?

Associated with all this is, of course, an altogether fundamental policy issue: Should the Federal Government (or more specifically, the Federal Emergency Management Agency) plan to

- (a) encourage spontaneous evacuation?
- (b) leave it alone to work itself out as it may?
- (c) discourage, if not inhibit, such outflows?

The direct effects of Crisis Relocation Planning itself on spontaneous evacuation are difficult to gauge. They represent a mixed outcome, the balance of which cannot be adequately interpreted: some people may be more encouraged to leave spontaneously knowing that relocation plans exist to avoid what they might view as possible traffic (and other) quagmire connected with directed relocation; others, in turn, knowing that relocation plans exist might alter their intentions to move spontaneously and wait for a Presidential action, and for local instructions, so as to reap the benefits of the planned process.

That massive spontaneous evacuation might also be expected from lower (TR-82) risk areas presents yet another policy problem. People who would leave areas otherwise designated as potential host counties stand to (a) deprive the areas of departure of their possible services--and of themselves, as a "helping" resource; at the same time, they might create an additional burden on those areas to which they move--thus "depriving" genuine high risk area relocatees of that portion of host area resources which they would have to utilize. There is little doubt here that prudent policy would aim at discouraging people from safer areas to move anywhere else as much as the question of encouragement, leaving it alone, or discouragement remains an open policy issue for those in high risk areas.

But there is an issue, nonetheless: should there be an active information effort (high profile communications) to make people aware of who is in higher and lower risk areas? Or, should the Crisis Relocation Planning process, with such publicity as may be attendant to it (but not otherwise initiated or enhanced by FEMA), serve as the main vehicle to disseminate increased awareness of risk/lower risk area information? Or, perhaps, should such information dissemination be planned, with considerable care, to be utilized only under crisis conditions? And, at what point of a crisis (since spontaneous movement could begin even fairly early!)?

The same policy questions, derived from the basic issue, apply to high risk area residents in the following manner: many potential spontaneous evacuees presently appear to misunderstand the notion of relocation/evacuation; a good portion of the spontaneous outflow amounts to maladaptive responses: going to shelter, moving only a small distance away from home, moving to another unsafe area. The planning process itself can serve to clarify public thinking on this matter, assuming that the process will

receive some publicity (in the mass media) or some relevant exposure (the plans being made available, such as in telephone books, to area residents). An information campaign, too, seems plausible and it raises the underlying questions regarding the high/low profile desirability of any FEMA program. Or else, preplanned information may come to be disseminated only under crisis conditions--but when in the crisis to forestall a good deal of such problematic spontaneous movement as might otherwise take place?

Now under the directed relocation mode, itself a result of crisis relocation plans and a Presidential decision, most people are inclined to follow instructions. But many, perhaps of the order of 30 percent (but with a variability of 60 to 20 percent!) may seek to relocate, following a Presidential recommendation, on their own.

Should such movement, once again, be encouraged, left alone to work itself out, or be discouraged as an aspect of national plans and eventual public communications? How does such directed relocation but to self-selected locations affect plans regarding critical workers? If many of them were to choose this option (to wait for Presidential action but then go to wherever they themselves feel they should go to), what happens with opportunities to keep some basic economic and infrastructural machinery of the evacuated areas going? What are the effects on possible organizational relocation plans? Should, in this modality, respective organizations (fire departments, police departments, utility companies, other major essential industries and businesses) themselves decide whether to discourage, leave alone or encourage employees to seek safety on their own terms rather than as an aspect of relocation plans? What advice should, or would, the Federal Emergency Management Agency give to such organizations along these lines--since they undoubtedly can be expected to seek such advice even were they to develop their "own" organization-specific relocation plans.

Beneath the already altogether complex surface of these policy-related problems, however, is located yet another--and exceptionally difficult--policy dilemma (problem): under actual emergency conditions and with the possible high rate of spontaneous evacuation, at what point will it prove (a) desirable, (b) prudent, (c) necessary to begin helping to direct this spontaneous movement? In other words, at what level of population mobility

and in what relationship to the trajectories of the burgeoning crisis itself should the spontaneous flow begin to be converted into a semi-directed, if not directed, movement--even though the President may not have acted and the State's Governor may not have acted on the basis of a Presidential recommendation.

The magnitudes of the possible spontaneous evacuation thus do not make it easy to differentiate between "spontaneous" evacuation and "directed" relocation in an altogether clean manner (with a Presidential decision as the cutting edge between the two processes).

If some "directing" of otherwise "spontaneous" movement will prove advisable (as above: desirable, or even prudent, or even more, necessary), how is that decision to be made? By whom? By what (crisis-related/spontaneous outflow-related) criteria? Should local emergency officials (and other members of the local governance) decide? But what might the Federal Emergency Management Agency say if they seek advice? What will the Regions say? What will State-level officials say--in response to advice-seeking on the part of local officials?

None of these policy problems and issues, the key ones having been explicitly identified here, are beyond the nation's capacity to deal with them. They present complex, intricate, and even subtle difficulties of major magnitudes. As such, they need to be taken into account, addressed, and resolved--perhaps not all at once, but in a chronological manner that is consistent with the very future trajectories of Crisis Relocation Planning. The one thing is certain: these are problems and issues which can be ignored only at high risk.

## EPILOGUE

## 1. MAJOR CONCLUSIONS

No attempt is made here to restate all the more detailed conclusions presented throughout the report. Such specifics are to be found in the appropriate CONCLUSIONS chapters with which each main PART of the report ends.

This brief overview then is undertaken along three levels of abstraction. For one, a summary is provided to describe the prevailing pattern of thinking in the national sample as a whole. Second, similarities and differences are highlighted between residents of TR-82 high risk areas and respondents who lived, in late 1978, in the lower (TR-82) risk areas. Third, the major differences, and by implication due to complementarities, among respondents are summed up as a function of salient socio-demographic characteristics of the counties in which they lived at the time of the data acquisition for this study.

To begin with, the aggregate data along the specific dimensions included in this analytic exercise are indicative of the following dominant patterns:

- (a) Nuclear war represents a real, and anything but negligible, danger in the awareness and assessment of our people.
- (b) Some two-thirds of the respondents are convinced that they live in "target" areas should war come about--they may be mistaken about this in that some in "lower risk" areas view themselves at high "target risk" and others in "high risk" areas do not. But the aggregate national pattern maps well, if such words can be used about nuclear war at all, onto the estimations of aggregate insult in the event of war as far as population exposure goes.
- (c) About as many respondents consider their areas to be likely victims of significant fallout even were their residential regions not directly targeted.
- (d) Only some 3 in 10 Americans "expect" to survive a nuclear war of the "next week's" variety--thus, indeed, at the current (though to the public generally unclear) preparedness level. To put it in more subjective terms: the survival likelihood is of the order of .3.



- (e) Fallout sheltering, blast sheltering or crisis relocation is seen to approximately double this "next week's war" survival rate. Blast shelters are seen to perform best, while crisis relocation, at the time of the study, worst of these three major postures.
- (f) People were convinced that the nation was spending much more on civil defense than, in fact, it had been doing (and still continues doing). A factor of 7 to 10 in this regard is involved.
- (g) But even more "ought" to be spent--on the average representing a shift from \$1 billion (estimate of current spending) to some \$1.6 billion (desirable investments)--and this at a time of civil defense budgets around \$100 million per year.
- (h) Most people, of the two-thirds magnitude, did not believe that there would be sufficient time available in which to evacuate; this may well be a critical factor in the relatively lower survivability payoff of crisis relocation as contrasted with fallout or blast protection of the in-place type.
- (i) At the same time, over 7 out of 10 Americans thought that there might exist circumstances, or there might come a time, when the President would recommend, urge, or direct crisis relocation from high risk to lower risk areas.
- (j) The concept of crisis relocation is an acceptable one: it does not yield extremely high desirability indices (perhaps again related to the warning time problem) but consistent and solid ones.
- (k) Strong majorities, exceeding two-thirds of our people by an important margin, support the need for crisis relocation planning.
- (l) Intentions to evacuate spontaneously in the event of a dramatically deteriorating international situation mark more than one half of the respondents, thus pointing to the possibility of rather massive outflows of the population from areas believed to be likely targets.

- (m) A Presidential decision to urge relocation would increase the outflow by a factor of perhaps 1.5: thus it is not inconceivable, in light of the data, that "directed relocation" would account for only about one third of all evacuation with the more spontaneous outflow accounting for two thirds of the eventual outcome.
- (n) In a directed relocation process, by far most of those likely to evacuate to begin with would prefer to "follow directions" rather than to decide to relocate to a place of their "own choosing."
- (o) But since information about high risk and lower risk areas is all but altogether confusing, and even the meaning of "relocation" is often unclear (being, as it is, frequently equated by the respondents with "movement to shelter" and at a short distance from one's residence at that), adaptive spontaneous evacuation amounts to just about 45 percent of all the spontaneous evacuation intentions as stated by the respondents.

It does not amount to the abuse of the data to outline the following simple storyline:

The threat of war is a real one. Should war come, the dangers of primary as well as secondary effects of attacking nuclear weapons are extremely widespread and extremely severe: only 30 percent or so of our people might survive a "next week's war" (thus amounting, to an extent, a perspective on an "out of the blue" attack under current conditions of perceived preparedness). This is so even though people believe that rather a great deal of money is being spent, per year, on civil defense protective measure (about \$1 billion per year!). Now though the payoff from full fallout protection, blast protection, or crisis relocation is seen as roughly doubling survival chances, this is anything but an optimistic estimate and certainly one that could not be called "complacent": still, between 33 and 40 percent of our people are seen to perish in a nuclear conflagration.

Despite this relatively modest payoff of civil defense (with such fatality rates being maintained in the estimates), the people feel that expenditures on civil defense ought to be sharply increased (to some \$1.6 billion per year).

Even though Americans think that there would likely not be enough time in which the relocation process could be undertaken, they strongly favor the development of relocation plans, they would attempt to spontaneously leave risky areas in massive numbers, they are convinced that the President might urge relocation, and by far most would abide by a Presidential decision to urge relocation and would follow relocation instructions rather than seek to improvise on their own.

At the next level of refinement of such basic conclusions, Table 86 represents a convenient summary of the data by comparing TR-82 high risk areas (respondents from such areas) with lower risk areas (respondents living in these areas in late 1978).

It is notable that differences by risk level are negligible for more items under study (the column in which the indices are "about the same" for high risk and lower risk area residents) than for any of the other categorizations.

In all then, the appropriate storyline which links Table 86 to the interpretive textual materials must be somewhat along the following lines:

In higher risk areas, the risk of being targeted is higher than in other areas of the country; and the risk of fallout is somewhat higher. With this goes a somewhat higher desirability of crisis relocation as a national posture, and a somewhat higher propensity toward spontaneous evacuation under highly threatening, and deteriorating, international conditions.

In lower risk areas, defined in terms of TR-82 (and thus independent of the respondent evaluations of risk itself), there is a prevailing belief that survival of "next week's war" and, for that matter, survival in "fallout shelters" has a better promise than it does

Table 86

HIGHER AND LOWER TR-82 RISK AREA COMPARISONS IN TERMS OF STUDY OF FOCI

Relevant Indices

<u>Higher in Risk than in Lower Risk Areas</u>	<u>Slightly Higher in Risk Areas</u>	<u>About the same in Risk/Lower Risk Areas</u>	<u>Slightly Higher in Lower Risk Areas</u>	<u>Higher in Lower Risk Areas</u>
<u>Perceived target danger</u>	<u>Perceived fallout danger</u>	<u>Survival chances upon relocation</u>	<u>Likelihood of war</u>	<u>Survivability in "next week's" war</u>
	<u>Desirability of crisis relocation</u>	<u>Current costs of civil defense</u>	<u>Survivability in blast shelters</u>	<u>Survivability in fallout shelters</u>
	<u>Intentions to evacuate sponta- neously</u>	<u>Desirable investments in civil defense</u>		<u>Time available in which to relocate</u>
		<u>Likelihood that President might act</u>		
		<u>Desirability of crisis relocation plans</u>		
		<u>Intentions to relocate if urged by President</u>		
		<u>Preference to follow instructions rather than relocate on one's own (given directed relocation)</u>		

in the high risk areas--a conclusion that might be, on the part of the respondents, quite intuitive though it is certainly a valid one. Similarly valid, by any objective index, is also the intuited feeling that there would be more time available in which to relocate--though, in fact, lower risk areas would not be expected to relocate at all and would be, rather, playing hosts (or else be unaffected) in the event of relocation.

In the lower risk areas, the threat of war is somewhat more salient than in high risk areas, and survival in blast-shelters, if such were to exist, also yields higher estimates even if war were to occur.

All this says that Americans in lower risk areas see survivability higher than do people in high risk areas--save only for the fact that the "relocated posture" yields results in which both risk area residents perceive the outcome essentially alike.

Since preferences for following instructions in the case of directed relocation do not differ between high risk and lower risk area residents (and since, as has been pointed out above, such preferences characterize a strong majority of the population), it also follows that "instructions not to relocate" would tend to be complied with--thereby attenuating the intentions of low risk area residents to spontaneously evacuate due to the existing nationwide lack of knowledge as to what constitutes high risk and lower risk areas.

Insofar as characteristics of counties of the 1978 study respondents produce important differences with respect to the perspectives on the substantive matters of this inquiry, two major configurations emerge: they involve differences between socio-economically more well-to-do and the less well-to-do counties; and they pertain to differences between areas characterized by high population dynamics and those typified by relative stability and, often, some decline (in population dynamics terms).

Table 87 highlights the main differences in terms of the socio-economic state, if not status, variables.

Table 87

KEY DIFFERENCES AMONG RESPONDENTS FROM MORE AND LESS  
WELL-TO-DO COUNTIES OF THE NATION

Higher Indices

Less Well-To-Do Counties

Higher likelihood of war

Higher survivability in fallout  
shelters

Higher survivability in blast  
shelters

Higher estimates of current  
civil defense costs

Higher estimates of desirable  
level of civil defense investment

Higher intention to evacuate  
spontaneously

Higher intention to relocate if  
recommended by President

Higher compliance with  
instructions as to where to go

More Well-To-Do Counties

Higher target danger

Higher fallout danger

Higher likelihood of Presidential  
decision to urge relocation

Higher increment of directed over  
spontaneous evacuation

Higher likelihood of adaptive  
spontaneous evacuation

Table 88 similarly provides data on the main differences between the "low growth" and "high growth" counties along the population dynamics axis.

The simplified continuum of counties along the socioeconomic axis is bounded by high, and respectively low, values on the following characteristics:

many versus few residents with high school education or more

few versus many families below poverty line

few versus many households with female head of the family

high versus low median family income

high versus low per capita local government expenditures

high value of farms versus lower value of farms

high value of land per acre versus lower value of farm land per acre.

The last two indices (dollar value of farms and per acre values of farm land) are, of course, not applicable to some of the counties from which the respondent samples were drawn, there being no farms, or essentially no farms, there at all: San Francisco, California; Baltimore City, Maryland; and New York counties of Bronx, New York and Queens--all in TR-82 high risk areas.

While Table 87 points to interesting, and even important, differences it is crucial to underscore that the basic directionalities of the data as presented in Tables 85 as well as 86 are not altered: in other words, the differences are relevant and consistent but in keeping with the dominant nationwide aggregate thrust, and in keeping with the patterning of aggregate differences between high risk and lower risk counties as shown in Table 86.

Since the central patterning of the data in terms of socioeconomic characteristics of the counties is essentially the same for high risk and other areas, Table 87 does not indicate such minor differences by risk level as occasionally show up.

In the more well-to-do types of counties (in terms of the indices referred to above), the perceived danger of being targeted and the danger of fallout are higher than in the less well-to-do counties; but survivabilities in both fallout shelters and blast shelters are seen higher in the latter (less well to do) counties.

Table 88

KEY DIFFERENCES BETWEEN HIGH GROWTH COUNTIES  
AND STABLE OR DECLINING COUNTIES

High Indices

Stable, Declining Areas

Higher survivability in  
"next week's" war

Higher survivability if  
"fallout" sheltered

Higher desirable costs of  
civil defense

Higher likelihood of warning  
(relocation) time availability

Higher desirability of  
crisis relocation posture

Higher likely relocation upon  
Presidential urging

High Growth Areas

Higher target danger

Higher fallout danger

Higher estimates of current  
civil defense spending

Higher likelihood of  
Presidential action

Higher likelihood of  
adaptive spontaneous  
evacuation



Both current and desirable cost data yield higher values in the lower SES counties. More residents seem likely to evacuate spontaneously in these areas, but fewer would, with then-current (late 1978) information level evacuate adaptively--that is, to safer areas rather than to nearby shelter or even from one high risk to another high risk area.

More people, on the whole, would relocate on Presidential urging from the less well to do counties than from the higher SES areas; but in the latter counties, the President is seen as more likely to make a relocation decision and it would amount to a sharper increase by directed evacuation over spontaneous outflows--even though the total outcome of relocation still indicates that more will have ended up relocated from the less rather than the more well to do counties.

And finally: in the lower SES counties, more residents would prefer to follow instructions as to where to go, whereas in the more well to do counties, more residents are inclined to go it "on their own" in this regard.

What the table does not contain, too, seems rather important. Thus regardless of the SES index of the counties, there prevails an essentially homogeneous belief that there would not be enough time to relocate; that crisis relocation posture is quite, though not highly, desirable; that crisis relocation planning ought to be carried out; but that survival upon relocation would be somewhat lower than survival in fallout or blast shelters--with the latter indices showing higher survivability values in the less well to do counties.

For convenience, the most typical higher and lower SES counties are identified in Table 89.

When it comes to the population dynamics data presented in Table 88 above, the same general provisions apply as they do to the data in terms of socio-economic well-being characteristics: the differences, such as they exist, are compatible with the aggregate nationwide results as well as with results by risk level; and the dynamics characteristics are also salient in both high risk and other areas so that the tabulation does not include separate items by risk level.

Table 89

EXAMPLES OF MOST TYPICAL HIGHER AND LOWER SOCIOECONOMIC STATUS COUNTIES\*

A. In High Risk Areas

Higher SES

Contra Costa, California  
Orange, California  
San Mateo, California  
Fairfield, Connecticut  
Arapahoe, Colorado  
Jefferson, Colorado  
Lake, Illinois  
Du Page, Illinois  
Montgomery, Maryland  
Prince Georges, Maryland  
Middlesex, Massachusetts  
Norfolk, Massachusetts

Oakland, Michigan  
Kergen, New Jersey  
Middlesex, New Jersey  
Somerset, New Jersey  
Union, New Jersey  
Nassau, New York  
Richmond, New York  
Suffolk, New York  
Westchester, New York  
Montgomery, Pennsylvania  
Arlington, Virginia  
Fairfax, Virginia

Lower SES

Jefferson, Alabama  
District of Columbia  
Orleans, Louisiana  
Baltimore City, Maryland  
St. Claire, Missouri  
Bronx, New York  
Kings, New York  
New York, New York  
Cumberland, North Carolina  
Davidson, North Carolina  
Sumter, South Carolina  
Summit, Ohio  
Philadelphia, Pennsylvania  
Hamilton, Tennessee  
Tom Green, Texas

B. In Lower Risk Areas

Riverside, California  
Chaffee, Colorado  
Carroll, Indiana  
Sarasota, Florida  
Reno, Kansas  
Clinton, Michigan  
Ottawa, Michigan  
Hampshire, Massachusetts  
Lincoln, Montana  
Chemung, New York  
Otsego, New York  
Wood, Ohio

Shelby, Ohio  
Chester, Pennsylvania  
Sheboygan, Wisconsin  
Washington, Wisconsin

Limestone, Alabama  
Lawrence, Arkansas  
De Soto, Florida  
Saline, Illinois  
Gallatin, Illinois  
Clarendon, South Carolina  
Darlington, South Carolina  
Orangeburg, South Carolina  
Marlboro, South Carolina  
Clairborne, Tennessee  
Hawkins, Tennessee  
Pittsylvania, Virginia  
Wirt, West Virginia

\*Only counties in the national sample considered here.

The less dynamic counties of the nation are characterized by higher survivabilities both under current conditions of preparedness ("next week's" war) though, of course, the overall low survival levels are maintained; and the survivabilities in "fallout shelters," too, tend to be higher. But with respect to either "blast shelters" (which are seen to provide the best survival payoff) or to "relocation" (which is seen performing worse than either blast or fallout shelters), the population dynamics traits of the counties do not yield consistent differences at all.

In the more dynamic counties, both target and fallout danger indices have higher values than in the more stable, if not declining, areas: this alone might then account for the difference in perceived survivabilities.

In the growing counties, current civil defense expenditures were seen as being higher than in the more stable counties; but the latter favored higher civil defense investments for the future more.

In the more stable counties, the likelihood that there would be enough time to relocate is higher, the crisis relocation posture desirability is higher, and more people would tend to relocate if the President so decided. By contrast, in the higher growth areas, the President is seen more likely to make such a decision, and what there would be of spontaneous evacuation (in gross numbers being similar for the counties regardless of the dynamics indicators), it would tend to be more adaptive more often.

Thus war likelihood, survivability in blast shelters or upon relocation, need for crisis relocation plans, spontaneous evacuation overall, and preference to follow instructions rather than decide where to go on one's own in the event of directed relocation are among variables for which the respondents are basically homogeneous regardless of the population change patterns of the respective counties.

Again, the key bounding values of the population dynamics continuum can be suggested so that it is altogether clear what enters into the fundamental differentiations of Table 88 and its subsequent brief discussion here:

Table 90

EXAMPLES OF MORE TYPICAL HIGH GROWTH AND MORE STABLE (OR DECLINING) COUNTIES\*

A. In High Risk Areas

High Growth	More Stable (Even Declining)
Madison, Alabama	Jefferson, Alabama
Maricopa, Arizona	San Francisco, California
Orange, California	Morgan, Colorado
Santa Barbara, California	District of Columbia
San Bernardino, California	Cook, Illinois
Arapahoe, Colorado	Orleans, Louisiana
Jefferson, Colorado	Baltimore City, Maryland
Du Page, Illinois	Hampden, Massachusetts
Dade, Florida	Barrien, Michigan
Jefferson, Louisiana	St. Claire, Missouri
St. Bernard, Louisiana	Salem, New Jersey
Montgomery, Maryland	Erie, New York
Prince Georges, Maryland	Bronx, New York
Anoka, Minnesota	Kings, New York
Sarpy, Nebraska	New York, New York
Cleveland, Oklahoma	Queens, New York
Dallas, Texas	Davidson, North Carolina
Harrison, Texas	Auglaize, Ohio
Fairfax, Virginia	Cuyahoga, Ohio
	Hamilton, Ohio
	Lucas, Ohio
	Mahoning, Ohio
	Summit, Ohio
	Allegheny, Pennsylvania
	Erie, Pennsylvania
	Northampton, Pennsylvania
	Philadelphia, Pennsylvania
	Westmoreland, Pennsylvania
	Sumter, South Carolina
	Hamilton, Tennessee
	Tom Green, Texas
	Milwaukee, Wisconsin

\*Only counties in the national sample considered here.

Table 90 (continued)

B. In Lower Risk Areas

High Growth

Riverside, California  
Sarasota, Florida  
Lincoln, Montana  
Clinton, Michigan  
Washington, Wisconsin

More Stable (Even Declining)

Jackson, Arkansas  
Lawrence, Arkansas  
Gallatin, Illinois  
Saline, Illinois  
Carroll, Indiana  
Reno, Kansas  
Otter Tail, Minnesota  
Madison, Nebraska  
Montgomery, New York  
Otsego, New York  
Chemung, New York  
Clarendon, South Carolina  
Darlington, South Carolina  
Marlboro, South Carolina  
Orangeburg, South Carolina  
Clairborne, Tennessee  
Hawkins, Tennessee  
Pittsylvania, Virginia  
Franklin, Vermont  
Wirt, West Virginia  
Wood, West Virginia  
Sheboygan, Wisconsin

High population growth in the decade of the 1960's  
versus (at the extreme) population decline

High net migration during the 1960's versus (at  
the extreme) net outmigration

High percentages of those who moved into their  
residence during the decade, as contrasted with  
very low percentage on this mobility axis

Higher versus lower birth rates

Lower versus higher death rates

In Table 90, some of the most typical counties toward the more  
extreme points on the dynamics continuum are listed for illustrative  
purposes.

Table 91, below, shows the percentages of respondents in the national  
sample who live in counties identified in the previous tables (Table 89  
and Table 90). Two percentages are provided: one deploys the total  
sample as the baseline; the second one, given in parenthesis, gives the  
percentages of at risk and those at lower risk respectively who live in  
the prototypical higher and lower SES counties, and high growth and more  
stable areas.

Table 91

PERCENTAGES OF STUDY RESPONDENTS BY COUNTY TYPE  
(N = 1,620)

<u>SOCIOECONOMIC TRAITS</u>	<u>High Risk Areas</u>		<u>Lower Risk Areas</u>	
More well-to-do	12.8	(16.6)*	9.0	(39.8)**
Less well-to-do	14.7	(19.0)	5.1	(22.6)
<u>POPULATION DYNAMICS</u>				
High growth	12.8	(16.6)	3.0	(13.4)
Stable/declining	27.6	(37.7)	10.8	(47.7)

\*N = 1,253 in high risk areas (77.3 of the total sample)

\*\*N = 367 in lower risk areas (22.7 of the total sample)

Essentially, these are surprise free results. That some 47.7 percent  
of the lower risk area respondents live in stable, low growth, or even  
declining areas is simple enough: these are rural counties with no major  
military installations; they are, if anything, predominantly Southern.  
And only relatively few low risk areas, being rural and not "meaningfully  
targetable," display relatively high growth rather than dominant stability:

these are scattered, in terms of the sample, across the nation (from Florida to California). But there are few of them (and with but 3.0 percent sample respondents, or 13.4 percent of those in lower risk areas) and none of these counties come from the East or, for that matter, the Eastern seaboard.

Among the at-risk counties which typify the higher socioeconomic well-being characteristics, the East, the West coast (specifically California), along with Colorado dominate the basic picture. A few counties from Illinois (Du Page and Lake), and a Michigan county (Oakland) appear on this roster. There are, to be sure, no really Southern counties in this complex: certainly, it would not seem quite appropriate to consider the key counties, on this list, located just around the District of Columbia as somehow "typically" Southern: thus Arlington and Fairfax, Virginia along with Prince Georges and Montgomery counties of Maryland are in this category, but characteristically "Southern" they are not; being, as they are, suburban areas of Washington, D.C. The lower SES counties in the high risk tier of areas is much more diversified: the major New York City counties are included, as are other major metropolitan areas (Orleans, Louisiana; Philadelphia, Pennsylvania; Baltimore City, Maryland) but the data has both a somewhat more Southern and a distinctly robust metropolitan flavor.

The high growth counties in the at-risk areas, too, are scattered across the map of the United States: but none are, not surprisingly, in the Northeastern tier of states. By contrast, the low growth, stable, declining prototypes are predominantly Eastern (New York, Pennsylvania, Maryland--as far as Baltimore City goes) along with a strong Ohio configuration, and a few counties in the Carolinas (Davidson, Sumter), a Texas county (Tom Green ), and Alabama area (Jefferson), a Colorado county (Morgan), and Orleans, Louisiana. No Pacific coast counties appear on this particular roster of low population dynamics areas--again, nothing that should occasion any surprises.

It is, perhaps, quite important to identify yet another rather persistent, and perhaps highly relevant, difference that runs through the data: respondents from high density areas, but not the higher density ones, seem to react rather differently than do others: these are, specifically, counties with population densities between about 5,000 and 10,000 residents per square mile.

- (a) They see themselves at higher risk from both direct assault (target danger) and from fallout--than do respondents in other density-defined areas.
- (b) They are more pessimistic about their survival chances, whether in fallout shelters, blast shelters, or even upon relocation not to speak of their estimated bleak prospects in a "next week's war."
- (c) The likelihood of spontaneous evacuation is lower than in other areas, and even a Presidential recommendation to relocate would not stand to increase the outflow as much as in other areas of the country.
- (d) Much less than others do they feel that there might be enough time in which to relocate--and viewing themselves at very high risk (as they actually are in terms of TR-82), they do not see fallout and blast shelters particularly effective (or as effective as others see them) while crisis relocation possibility seems impended by this pronounced belief that there would not be sufficient warning time available.
- (e) And finally, but by far not trivially, they also estimate the national investments on civil defense to be higher than do others--with the lower payoffs already mentioned above.

Perhaps all this, too, is partially explained by the fact that residents in these counties consider a major war less likely than do others. Be it as it may, however, here is a more characteristic picture of respondents who defined threat levels, if war should come, as very high, who feel that the nation has been spending a good deal on civil defense measures (and while more should be spent, the increments are lower than for other respondents), but who do not think that the survivability payoff is particularly promising: in fallout or blast shelters due to the severity of the direct threat to the counties, and by relocation due to the unlikelihood that there would be enough time to relocate. But even spontaneous evacuation indices are lower here so that there is a sense of a generally more pessimistic outlook should war come coupled with a more optimistic view that war will simply not happen.



The counties which are included in this category in terms of the late 1978 national sample include:

Denver, Colorado  
Cook, Illinois  
Essex, New Jersey  
Union, New Jersey  
Richmond, New York  
Arlington, Virginia

In the sample as a whole, this has to do with but 4.1 percent of all respondents, or 5.3 percent of those who resided in TR-82 high risk areas. But the pattern is a persistent one--possibly the most problematic one from the vantage point of civil defense efforts, and thus it merits being pointed out in this brief summarization.

There are, to be sure, not many other counties across the United States that would fall into this single-variable (density: 5,000 to 10,000) defined category. But there are a few: Columbus City, Georgia; St. Louis, Missouri; and many of the independent cities of Virginia, to wit: Alexandria, Bristol, Falls Church, Manassas, Manassas Park, Norfolk Petersburg and Winchester.

The density pattern of Wayne, Michigan; Milwaukee, Wisconsin and Nassua, New York is so close that typified by the counties cited above that only the need for a clear cutting edge (5,000 per square mile as the bottom line) prevents their inclusion in this roster.

An interpreter of the data, such as this researcher, must then be tempted to suggest that these are the kinds of areas that need to be particularly noted as potential weathervanes of evolving disaffection with civil defense programs on a somewhat more general scale should such shifts in the predominantly positive national thinking begin to manifest themselves in the first place.

While this appears, in view of the stability of data across some three decades, not a very likely prospect, it is certainly something not to disregard.

This then represents the mainstream of the conclusions from this analytic inquiry.

Appendix I

DISTRIBUTION OF 1978 SAMPLE RESPONDENTS BY  
TR-82 RISK AND LOWER (N) RISK AREAS

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### Brief Explanation

Data organized by Regions I-X (Federal Administrative Regions, 1977 City and County Data Book, Bureau of the Census, 1978).

Within each Regions, states in which samples were drawn are alphabetized.

Within each State, counties are identified from which the sample was drawn (that is, the Primary Sampling Units are located in the respective counties).

TR-82 was used to identify "risk" and "no risk" counties (and thus respondents) those "partially" in a risk area are included as being at risk.

Connecticut

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Fairfield	22	0	
State Totals	22	0	[22]

Northeast  
New England

TR-82: Region 1

Federal Region I

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Massachussets

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Exxex	8	0	
Hampden	17	0	
Hampshire	0	3	
Middlesex	7	0	
Norfolk	2	0	
Worcester	2	0	
State Totals	36	3	[39]

Northeast  
New England

TR-82: Region 1

Federal Region I

Vermont

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Franklin	0	15	
Grand Isle	0	6	
State Totals	0	21	[21]

Northeast  
New England  
TR-82: Region 1

Federal Region I

---

New Jersey

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Bergen	4	0	
Camden	6	0	
Essex	6	0	
Gloucester	11	0	
Middlesex	16	0	
Salem	2	0	
Union	11	0	
Somerset	3	0	
State Totals	59	0	[59]

Northeast  
Middle Atlantic  
TR-82: Region 1

Federal Region II

New York

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Bronx	10	0	
Chemung	0	2	
Erie	12	0	
Kings	33	0	
Madison	2	0	
Manhattan	29	0	
Montgomery	0	1	
Nassau	12	0	
Otsego	0	10	
Queens	14	0	
Richmond	13	0	
Suffolk	6	0	
Westchester	14	0	
State Totals	145	13	[158]

Northeast  
Middle Atlantic  
TR-82: Region 1

Federal Region II

---

Delaware

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
New Castle	8	0	
State Totals	8	0	[8]

South  
South Atlantic  
TR-82: Region 2

Federal Region III

District of Columbia

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
D.C.	6	0	
State Total	6	0	[6]

South  
South Atlantic  
TR-82: Region 2

Federal Region III

---

Maryland

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Anne Arundel	2	0	
Baltimore	7	0	
Baltimore City	3	0	
Montgomery	13	0	
Prince Georges	2	0	
Wicomico	0	4	
State Totals	27	4	[31]

South  
South Atlantic  
TR-82: Region 2

Federal Region III

Pennsylvania

<u>Counties</u>	<u>'At Risk</u>	<u>Others</u>	
Allegheny	13	0	
Bucks	2	0	
Chester	0	8	
Erie	17	0	
Montgomery	8	0	
Northampton	2	0	
Philadelphia	25	0	
Westmoreland	2	0	
State Totals	69	8	[77]

Northeast  
Middle Atlantic  
TR-82: Region 2

Federal Region III

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Virginia

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Arlington	7	0	
Fairfax	8	0	
Pittsylvania	0	4	
State Totals	15	4	[19]

South  
South Atlantic  
TR-82: Region 2

Federal Region III



West Virginia

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Wirt	0	4	
Wood	0	12	
State Totals	0	16	[16]

South  
South Atlantic  
TR-82: Region 2

Federal Region III

---

Alabama

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Jefferson	11	0	
Limestone	0	3	
Madison	10	0	
State Totals	21	3	[24]

South  
East South Central  
TR-82: Region 3

Federal Region IV

Florida

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Dade	31	0	
De Soto	0	8	
Duval	19	0	
Sarasota	0	11	
State Totals	50	19	[69]

South  
South Atlantic  
TR-82: Region 3

Federal Region IV

---

Georgia

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Fulton	10	0	
State Total	10	0	[0]

South  
South Atlantic  
TR-82: Region 3

Federal Region IV

North Carolina

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Chatham	0	15	
Cumberland	13	0	
Davidson	4	0	
Rowan	0	15	
State Totals	17	30	[47]

South  
South Atlantic  
TR-82: Region 3

Federal Region IV

South Carolina

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Clarendon	0	4	
Darlington	0	5	
Marlboro	0	10	
Orangeburg	0	8	
Sumter	22	0	
State Totals	22	27	[49]

South  
South Atlantic  
TR-82: Region 3

Federal Region IV

Tennessee

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Claiborne	0	1	
Davidson	10	0	
Hamblen	0	6	
Hamilton	18	0	
Hawkins	0	6	
Wilson	0	2	
State Totals	28	15	[43]

South  
East South Central  
TR-82: Region 3

Federal Region IV

Illinois

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Cook	26	0	
Du Page	6	0	
Gallatin	0	5	
Lake	9	0	
Ogle	21	0	
Saline	0	11	
Will	3	0	
State Totals	65	16	[81]

North Central  
East North Central  
TR-82: Region 4

Federal Region V

Indiana

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Carroll	0	10	
State Totals	0	10	[10]

North Central  
East North Central  
TR-82: Region 4

Federal Region V

---

Michigan

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Berrien	9	0	
Clinton	0	4	
Eaton	6	0	
Ingham	5	0	
Kent	28	0	
Oakland	5	0	
Ottawa	0	9	
Van Buren	0	6	
Wayne	18	0	
Monroe	6	0	
State Totals	77	19	[96]

North Central  
East North Central  
TR-82: Region 4

Federal Region V

Minnesota

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Anoka	5	0	
Hennepin	5	0	
Otter Tail	0	3	
State Totals	10	3	[13]

North Central  
West North Central  
TR-82: Region 4

Federal Region V

---

Ohio

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Auglaize	7	0	
Cuyahoga	25	0	
Hamilton	10	0	
Hardin	0	2	
Lake	7	0	
Lucas	7	0	
Mahoning	9	0	
Portage	5	0	
Shelby	0	5	
Summit	15	0	
Trumbull	6	0	
Wood	0	4	
State Totals	91	11	[102]

North Central  
East North Central  
TR-82: Region 4

Federal Region V

Wisconsin

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Milwaukee	6	0	
Sheboygan	0	19	
Washington	0	3	
State Totals	6	22	[28]

North Central  
East North Central  
TR-82: Region 4

Federal Region V

---

Arkansas

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Jackson	0	5	
Lawrence	0	14	
Pulaski	12	0	
State Totals	12	19	[31]

South  
West South Central  
TR-82: Region 5

Federal Region VI

Louisiana

<u>Counties*</u>	<u>At Risk</u>	<u>Others</u>	
Jefferson	7	0	
Orleans	12	0	
St. Bernard	8	0	
State Totals	27	0	[27]

\*Parishes

South  
West South Central  
TR-82: Region 5

Federal Region VI

---

Oklahoma

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Cleveland	14	0	
Oklahoma	18	0	
State Totals	32	0	[32]

South  
West South Central  
TR-82: Region 5

Federal Region VI



Texas

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Dallas	25	0	
Harris	12	0	
Pecos	0	12	
Reeves	0	9	
Tarrant	21	0	
Tom Green	27	0	
State Totals	85	21	[106]

South  
West South Central  
TR-82: Region 5

Federal Region VI

---

Kansas

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Reno	0	18	
State Total	0	18	[18]

North Central  
West North Central  
TR-82: Region 6

Federal Region VII

Missouri

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Clay	2	0	
Johnson	2	0	
St. Clair	6	0	
St. Louis	7	0	
State Totals	17	0	[17]

North Central  
West North Central  
TR-82: Region 6

Federal Region VII

---

Nebraska

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Douglas	20	0	
Madison	0	8	
Sarpy	6	0	
State Totals	26	8	[34]

North Central  
West North Central  
TR-82: Region 6

Federal Region VII

Colorado

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Arapahoe	7	0	
Chaffee	0	9	
Denver	4	0	
Jefferson	2	0	
Morgan	16	0	
State Totals	29	9	[38]

West  
Mountain  
TR-82: Region 6

Federal Region VIII

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Montana

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Lincoln	0	17	
State Total	0	17	[17]

West  
Mountain  
TR-82: Region 8

Federal Region VIII

Arizona

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Maricopa	12	0	
State Total	12	0	[12]

West  
Mountain  
TR-82: Region 7

Federal Region IX

---

California

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
Alameda	4	0	
Contra Costa	8	0	
Los Angeles	83	0	
Monterey	8	0	
Orange	14	0	
Riverside	0	14	
San Bernardino	2	0	
San Diego	28	0	
San Francisco	10	0	
San Mateo	9	0	
Santa Barbara	9	17	
State Totals	175	31	[206]

West  
Pacific  
TR-82: Region 7

Federal Region IX

Washington

<u>Counties</u>	<u>At Risk</u>	<u>Others</u>	
King	5	0	
Kitsap	10	0	
Pierce	9	0	
Spokane	30	0	
State Totals	54	0	[54]

West  
Pacific  
TR-82: Region 8

Federal Region X

No Sample Points

New England

Maine  
New Hampshire  
Rhode Island

West North Central

Iowa  
North Dakota  
South Dakota

East South Central

Kentucky  
Mississippi

Mountain

Idaho  
Wyoming  
New Mexico  
Nevada  
Utah

Pacific

Oregon  
Hawaii  
Alaska

Appendix II

GROUPING OF COUNTIES AND NUMBERS OF RESPONDENTS  
(BY RISK LEVEL)

255

### Brief Explanation

As much as possible, 1975 Bureau of the Census data were used in grouping the counties from which the 1978 national sample was drawn. When such data were not available, not having been updated by the Bureau of the Census, 1970 statistics were used.

Not all groupings for high risk area counties and lower risk counties are identical: this is, of course, due to the fundamental differences between these two sets of counties. Appendix III provides some highlights of the main differences.

When only few respondents fell into one of the particular groups generated, two (and on one occasion even three) groups were collapsed into one. This is indicated in this Appendix by " ]".



Table A

GLOBAL CHARACTERISTICS OF COUNTIES  
(NUMBERS OF RESPONDENTS)

	<u>In Risk Areas</u>	<u>In Other Areas</u>
<u>Density</u>		
<= 100	108	270
100 <= 1,000	495	97
1,000 <= 5,000	453	
5,000 <= 10,000	67	
10,000 <=	130	

<u>Percent Urban</u>		
0	6	20
0 <= 25	- 93	78 98
25 <= 50	87	122
50 <= 75	78	107
75 <= 100	905	40
100	177	-

<u>Total Farm Acreage</u>		
<= Mean	663	198
>= Mean	466	219

<u>Percent of Land in Farming</u>		
<= Mean	745	102
>= Mean	338	265

<u>Percent Structures Built After 1960</u>		
<= Mean	720	240
>= Mean	483	127

<u>Percent Structures Built Before 1950</u>		
<= Mean	653	130
>= Mean	600	237

Table B  
POPULATION COMPOSITION CHARACTERISTICS OF COUNTIES  
(NUMBERS OF RESPONDENTS)

	<u>In Risk Areas</u>	<u>In Other Areas</u>
<u>Percent Minorities</u>		
≥ 25	208	46
15 ≤ 25	303	35
5 ≤ 15	488	64
1 ≤ 5	247	212
1 >	7	10
	254	222
<u>Percent Under Five Years of Age</u>		
≤ Mean	979	235
≥ Mean	274	128
<u>Percent 65 Years and Older</u>		
≤ Mean	838	164
≥ Mean	415	203
<u>Percent Owner Occupied</u>		
≤ 25.0	72	
25.0 ≤ 45.0	66	
45.0 ≤ 55.0	222	17
55.0 ≤ 75.0	799	301
75.0 <	92	49
		318

Table C  
POPULATION DYNAMICS CHARACTERISTICS OF COUNTIES  
(NUMBERS OF RESPONDENTS)

	<u>In Risk Areas</u>	<u>In Other Areas</u>
<u>1960-70 Population Change %</u>		
<= 0	153	66
0 <= 10	368	98
10 <= 25	339	118
25 <= 50	283	57
50 <	110	28
		85
<u>Net Migration</u>		
<= -10	170	62
-10 <= 0	328	111
0 <= 10	315	87
10 <= 25	272	48
25 <= 50	122	48
50 <	46	11
		59
<u>Birth Rate</u>		
<= Mean	593	280
>= Mean	660	87
<u>Death Rate</u>		
<= Mean	805	159
>= Mean	448	208
<u>Percent Moved 1960 - 1970</u>		
<= 40.0	51	29
40.0 <= 50.0	495	216
50.0 <= 60.0	404	65
60.0 <=	303	57
		245

Table D  
OCCUPATIONAL STRUCTURE CHARACTERISTICS OF COUNTIES  
(NUMBERS OF RESPONDENTS)

In Risk Areas

In Other Areas

<u>Percent in Manufacturing</u>		
<= Mean	763	215
>= Mean	490	162

<u>Percent in Wholesale/Retail</u>		
<= Mean	425	253
>= Mean	828	114

<u>Percent in Services</u>		
<= Mean	623	254
>= Mean	630	113

<u>Percent in Education</u>		
<= Mean	885	224
>= Mean	368	143

<u>Percent in Construction</u>		
<= Mean	1,123	245
>= Mean	130	122

<u>Percent Farm Population</u>		
Ø	924	11
0 <= 1	126	57
1 <= 5	137	83
5 <= 15	44	148
15 <	22	68

Table E

SOCIOECONOMIC CHARACTERISTICS OF COUNTIES  
(NUMBERS OF RESPONDENTS)

In Risk Areas

In Other Areas

<u>Percent with H.S. Education or More</u>		
$\leq 33.3$	4	77
$33.3 \leq 45.0$	123	78
$45.0 \leq 55.0$	528	106
$55.0 \leq 66.7$	495	89
$66.7 <$	103	17
		106

<u>Percent Female Heads of Families</u>		
$\leq 7.5$	214	113
$7.5 \leq 10.0$	428	214
$10.0 \leq 12.5$	243	13
$12.5 \leq 15.0$	224	5
$15.0 <$	144	22
		40

<u>Percent Below (1969) Poverty Line</u>		
$\leq 5.0$	224	20
$5.0 \leq 10.0$	745	168
$10.0 \leq 15.0$	231	64
$15.0 \leq 25.0$	53	74
$25.0 <$		41
		115

<u>Median Family Income (\$000)</u>		
$< 8$	98	134
$8 \leq 10$	354	166
$10 \leq 12$	615	67
$12 <$	186	-

Table E (continued)

	<u>In Risk Areas</u>	<u>In Other Areas</u>
<u>Median Value</u> <u>(Owner Occupied)</u>		
$\leq 10^4 k$	9	79
$10^4 k \leq 10^{4.2} k$	329	196
$10^{4.2} k \leq 10^{4.4} k$	679	92
$10^{4.4} k <$	236	-

<u>Per Capita Local</u> <u>Expenditures</u>		
$\leq 150$	65	110
$150 \leq 200$	251	91
$200 \leq 250$	409	71
$250 \leq$	528	95

<u>Average 1969</u> <u>Value</u>		
$\leq$ Mean	507	278
$>$ Mean	636	89

<u>Average Land</u> <u>Value Per Acre</u>		
$\leq$ Mean	820	367
$>$ Mean	323	-

Appendix III

DISTRIBUTIONS OF RESPONDENTS IN SAMPLE  
COUNTIES BY TR-82 RISK LEVEL

## 1. Overall characteristics

In all, respondents from 156 counties of the 48 contiguous states of the Union were included in the sample. Included in TR-82 high risk areas were 1,253 respondents (77.3 percent of the total sample) residing in 110 of the 156 counties (70.5 percent of the counties). In lower risk areas of 46 counties (29.5 percent of all counties) were 367 sampled respondents (22.7 percent of the sample).

## 2. Global characteristics

In lower risk areas (Appendix II above), there were no respondents in counties with population densities exceeding 1,000 per square mile. The median density was 68. It was 1,207.5 in the high risk areas.

The overall average density for the sampled counties was 1,711.7.

In the high risk areas, not surprisingly, there were very few respondents in counties with low levels, as defined by the Bureau of the Census, of urbanization. Thus the low urbanization groups were combined to include 93 respondents (7.4 percent of all at risk) in counties with 50 percent or less urbanization. By obvious contrast, there were no counties in lower risk area at 100 percent urbanization, and 10.9 percent of the respondents from these areas lived in counties with an urbanization index exceeding 75 percent (while 72.2 percent of the high risk area residents lived in such counties).

For the sample as a whole, the average index was 65.9 percent.

The average farm acreage was 213.5 acres with an average of 44.8 percent land in farming. In high risk areas, quite logically most respondents lived in counties with farm acreage below the overall sample average (62.8 percent) and in areas with less than average county area in farm lands (73.2 percent of the high risk area respondents).

The opposite, of course, is true of lower risk area residents: 59.7 percent lived in counties with above average acreage, and 72.2 percent in counties with more than average area in farming.

On balance, 28.4 percent of the structures were built after 1960: 57 percent and 65 percent of high risk and lower risk area residents lived in counties where this percentage fell below the average.

In turn, 50.1 percent of dwelling units were built prior to 1950: 52.1 percent of high risk area respondents resided in below-average counties, while 35.4 percent of lower risk area residents lived in such counties.



### 3. Population composition characteristics

Some 22.1 percent of the lower risk area respondents live in counties with 15 percent or fewer minority residents; 40.8 percent of the high risk area respondents resided in such counties.

In turn, 60.5 percent in the lower risk areas were in counties with 5 percent or fewer minority inhabitants; by contrast, 20.3 percent lived in such counties among the high risk area respondents.

The sample average overall was 10.0 percent of non-whites for the sampled counties.

Some 78.1 percent and 65.1 percent in high risk and lower risk areas respectively were in counties with above average percentage of residents under five years of age. The sample average was 8.7 percent.

Now 9.1 percent average of residents 65 years of age and older was the cutting point of this particular datum: 66.9 percent in high risk areas were in counties which fell below the average percentage of the elderly; 44.7 percent was the comparable percentage in lower risk areas.

In low risk areas, no respondents were found in counties with owner occupancy of dwelling units of 45 percent or less; and by far most of the respondents (86.6 percent) were in counties with occupancy rates of 45 to 75 percent (and of these, the bulk, 94.6 percent, were in counties in the 50 to 75 percent bracket).

The nationwide sample average was 66.9 percent.

### 4. Population dynamics characteristics

With 23.6 percent average population growth in the counties of the 1978 sample, the high risk areas typified by fewer respondents in counties with net population loss (12.2 percent having lived in these counties) than are the lower risk counties (18.0 percent). High growth, in turn, of the order of 25 percent or more characterizes 31.4 percent of the respondents in high risk areas and 23.1 percent in the lower risk areas.

Net population loss due to outmigration (relative, indeed, to immigration) is higher (47.1 percent of respondents) in lower risk than in high risk areas (39.8 percent). However, high positive population gains due to migration involve 16.1 percent of the lower risk area residents, and 13.4 percent of the respondents in the high risk counties.

The sample average of net migration as a factor in population change amounts to +10.2 percent.

When it comes to birth and death rates, important differences are immediately noticeable. In the high risk areas, 52.7 percent of the respondents are in counties with above average birth rates, and 62.4 percent resided in counties with below average death rates.

In the lower risk residential areas, 76.3 percent of the respondents were in counties with below average birth rates, and 56.7 percent in counties with above average death rates.

The basic birth rate average was 17.4, and the death rate mean was 9.2.

In the high risk areas, many more respondents moved into their then-current residence during the decade of the 1960's (56.4 percent living in counties with 50 percent or more of such mobile inhabitants) than in the lower risk counties (33.2 percent is the comparable percentage). These statistics are anchored in the national sample average of 50.2 percent of respondents who moved to their then-extant residence during the decade of 1960 to 1970.

##### 5. Occupational structure characteristics

The sample-wide average in employment patterns were as follows:

- 27.2 percent in manufacturing
- 19.5 percent in wholesale/retail business
- 7.2 percent in services
- 7.9 percent in education
- 6.6 percent in construction

wherein all these categories used are defined as they have been by the Bureau of the Census. High risk and lower risk areas do not differ in the percentage of respondents employed in manufacturing. But 33.9 percent in high risk areas and 68.9 percent in lower risk areas lived in counties falling below the average of employment in wholesale/retail trade; 49.7 percent and 69.2 percent respectively were below the average employment levels in terms of services; 70.6 percent (high risk) and 61.0 percent (lower risk) were in counties below the average in employment in educational services, and 89.6 percent and 66.8 percent respectively below the average in terms of employment in construction.

The population living on farms averaged 4.8 percent for the sampled counties: in high risk areas, 73.7 percent of the respondents lived in counties with essentially no population living on the farms; in the lower risk counties, not surprisingly, the corresponding percentage was only 18.5 percent, and 58.8 percent resided in counties with 5 or more percent in farming (while this particular percentage was only 5.3 among the high risk area respondents).

#### 6. Socioeconomic characteristics

The respondents in high risk area, on balance, lived in counties with more formally educated residents. Thus 47.7 percent of them resided in counties where 55 percent or more completed at least their secondary schooling (with 8.2 percent in counties with 66.7 percent or more of such residents), while in the lower risk areas, the corresponding percentage (55 percent and more) was 28.8 percent (4.6 percent in counties with more than 66.7 percent of the more educated).

In turn, 21.0 percent of the lower risk area respondents were in counties where 33.3 percent of fewer inhabitants had high school or more education; only 0.3 percent of the high risk area respondents lived in suchlike counties.

The sample average for all counties was 52.2 percent.

Given an average of 9.7 percent for the sampled geographic areas as a whole, more high risk area respondents were in counties with relatively many female headed households (17.9 percent where the percentages were 12.5 to 15.0 percent, and 11.5 percent where female heads of household amounted to more than 15 percent). In lower risk areas, the parallel percentages were 1.4 percent (12.5 to 15.0 percent of female headed households) and 6.0 percent (over 5 percent of such households).

But more people in the lower risk areas resided in counties with relatively large population percentages in households with earnings below the poverty line: 20.2 percent in counties with 15 to 25 percent, and 11.2 percent in counties with over 25 percent, of these "below the poverty line" inhabitants.

In the high risk areas, none of the respondents resided in counties with the poverty index in excess of 25 percent; and only 4.2 percent were in counties where the poor households amounted to 15 to 25 percent.

The average for all counties included in the study was 10.1 percent of "below the poverty line" households.

Also, the median family incomes were lower in the less risky areas. The overall sample average being \$9,918.80, 36.5 percent in the lower risk areas were in counties where the median fell below \$8,000 per year; only 7.8 percent of the high risk area respondents lived in such counties.

By contrast, no respondents in the lower risk areas were in counties with median income in excess of \$12,000; but 14.8 percent of the high risk area interviewees resided in these types of counties. While the average median value of owner occupied dwelling units was \$17,798.28, 21.5 percent of the lower risk areas were in counties where the median was below \$10,000, whereas only 0.7 percent of the high risk area respondents were found from such counties. Furthermore, 18.8 percent of the high risk area respondents lived in counties with median owner occupied housing dollar value in excess of \$25,119--and there were no such respondents in the lower risk areas.

Local government's per capita expenditures, too, were higher in the high risk areas: 42.1 percent lived in counties where local government expenditures averaged more than \$250 per year per resident; 25.9 percent of the lower risk area respondents dwelled in such counties. Only 5.2 percent in high risk areas lived in counties where local government spending per capita was less than \$150 per year; in the lower risk areas, the corresponding percentage was 30.0 percent.

Now some 8.8 percent of the high risk area respondents were in counties with no, or essentially no, farms. Of the remaining ones (91.2 percent), 44.4 percent were in counties where the average value of a farm was below the sample average of \$107,554.60, and 71.7 percent in counties where the land value per acre was also below the average (of \$1,354.10). In the lower risk areas, all respondents were in counties with below average per acre farm land value, and 75.7 percent in counties where the average value per farm fell short of the sampled county average.

June 8, 1982

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Some Ecological Contexts of Attitudes Concerning Issues of Civil Defense  
Jeri Nabeersley  
University Center for Social and Urban Research  
University of Pittsburgh

CONTRACT: EMW-1-4070  
WORK UNIT: 48121

277 pages  
March, 1983

The examination of six clusters of major issues bearing on public credibility and acceptance of national civil defense preparedness are examined in terms of the geo-ecological context of the residential area. The six clusters of issues are cast in terms of survey response to the 1978 national survey concerning issues of civil defense. They include public perception of threat, survivability, civil defense costs, the implementation of crisis relocation programs, general attitudes toward crisis relocation, and claims regarding willingness to act. This research contextualizes each of these clusters of issues in terms of the geo-ecological characteristics at the county level. The contextualization includes both data regarding fundamental global, population composition, population dynamics, occupational structure and socioeconomic status characteristics and the Department of Defense's High Risk Areas (TR-82) data for the respondent's residence.

The key differences among respondents from counties characterized as more and less well-to-do may be summarized as: Less well-to-do counties estimate the likelihood of war, the chances of survival both in fallout and blast shelters, the current and desirable investment in civil defense, the intention to evacuate spontaneously and relocate upon recommendation by the President, and compliance with instructions where to go at higher levels than do more well-to-do counties. On the other hand more well-to-do counties find the target and fallout danger, likelihood of Presidential decision to relocate and the associated increment to spontaneous evacuation, and likelihood of adaptive spontaneous evacuation higher than those respondents in less well-to-do counties.

Residents of high risk areas (TR-82) tend to recognize this as they perceive the target danger at higher levels than do residents of low risk areas. Furthermore, respondents residing in high risk areas perceive fallout danger at slightly higher levels, find crisis relocation slightly more desirable, and are slightly more likely to evacuate spontaneously than residents of low risk areas. Residents of low risk areas find the target and fallout danger, likelihood of Presidential decision to relocate and the associated increment to spontaneous evacuation, and likelihood of adaptive spontaneous evacuation higher than those respondents in less well-to-do counties.

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